

**PERMANENT ANTERIOR TEETH FRACTURES  
AND ITS IMPACT ON ORAL HEALTH RELATED  
QUALITY OF LIFE AMONG 8-15 YEARS OLD  
SCHOOL CHILDREN OF CHENNAI CITY  
- A CROSS-SECTIONAL SURVEY**

*Dissertation submitted  
in partial fulfillment of the requirements  
for the degree of*

**MASTER OF DENTAL SURGERY**

**BRANCH VII**

**PUBLIC HEALTH DENTISTRY**



**THE TAMILNADU DR. MGR MEDICAL UNIVERSITY**

**CHENNAI - 600 032**

**2014-2017**

# CERTIFICATE



This is to certify that this dissertation submitted by **Dr. K.Priya Deepa Lakshmi** (2014 – 2017 Batch), Post Graduate Student, Department of Public Health Dentistry, titled **"Permanent anterior teeth fractures and its impact on oral health related quality of life among 8-15 years old school children of Chennai city -A cross-sectional survey"** was carried out under my guidance in partial fulfilment of the regulations laid down by **The Tamil Nadu Dr. M.G.R. Medical University**, Chennai for M.D.S in **Public Health Dentistry** (Branch VII) degree examination.

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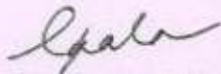
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Thank you for submitting your research proposal, which was considered at the Institutional Ethics Committee meeting held on the 03.03.2016, at TN Govt.Dental College. The decision of the members of the committee, the Secretary and the Chairperson IEC of TN Govt. Dental College is here under:


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Revision	-----
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## DECLARATION

I Dr. K.Priya Deepa Lakshmi do hereby declare that the dissertation titled **“Permanent anterior teeth fractures and its impact on oral health related quality of life among 8-15 years old school children of Chennai city – A cross-sectional survey”** was done in the Department of Public Health Dentistry, Tamil Nadu Government Dental College and Hospital, Chennai-600003. I have utilized the facilities provided in the Government Dental College and Hospital for the study in partial fulfillment of the requirements for the degree of Master of Dental Surgery in the speciality of Public Health Dentistry (Branch VII) during the course period 2014-2017 under the conceptualization in guidance of the dissertation guide **Professor and Head Dr.M.B.Aswath Narayanan, B.Sc., MDS.,**

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and

**Dr. M.B.Aswath Narayanan B.Sc., MDS.**, aged 51 years working as Professor and Head of the Department of Public Health Dentistry at the college, having residence address at “Mathuram”, Plot No: 161, No: 5, Murugu Nagar, 5th street, Velachery, Chennai – 42 (herein after referred to as the ‘Researcher and Principal investigator’)

and

**Dr.K.Priya Deepa Lakshmi** aged 30 years currently studying as Post Graduate student in the Department of Public Health Dentistry (herein after referred to as the ‘PG/Research student and Co- investigator’).

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Student Researcher

Witnesses

Student Guide

1.

2.



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## LIST OF ABBREVIATIONS

QoL	Quality of life
TDI	Traumatic dental injury
OHRQoL	Oral health-related quality of life
CPQ	Child Perception Questionnaire
COIDP	Child Oral Impacts on Daily Performances
COHIP	Child Oral Health Impact Profile
ECOHIS	Early Childhood Oral Health Impact Scale
WHO	World Health Organization
OIDP	Oral Impact on Daily Performances
COHQoL	Child oral health related quality of life
EDFs	Enamel dentine fractures
p value	Probability value
SPSS	Statistical Package for Social Sciences
ANOVA	Analysis of Variance
B-ECOHIS	Brazilian version of Early Childhood Oral Health Impact Scale
CPI	Community Periodontal Index
FDI	Fédération dentaire internationale

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# INTRODUCTION

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## **INTRODUCTION**

Numerous orofacial conditions such as dental caries, malocclusion, tooth fractures, cleft lip/ palate and craniofacial anomalies are associated with childhood. Oxford dictionary defines fracture as “The cracking or breaking of a hard object or material”.<sup>1</sup> High levels of violence, traffic accidents, social, cultural, environmental factors and greater participation of children in sports have contributed to transform tooth fractures into a serious dental public health problem. Tooth fracture is a distressing experience on physical level, but it may also have an effect on emotional and psychological levels.<sup>2</sup>

In contrast to dental caries and periodontal disease, reliable data on the frequency and severity of oro-dental trauma are still lacking in most countries, particularly in developing countries. Some countries in Latin America report dental trauma for about 15% of school children, while prevalence rates of 5-12% are found in children aged 6-12 years in the Middle East. However, recent studies from certain industrialized countries have revealed that the prevalence of dental trauma is on the increase, ranging from 16-40% among 6-year-old children and in 4- 33% among 12-14-year-old children.<sup>3</sup> A 2.5 year retrospective review done by Ritesh Kalaskar et al (2013) in Central India concluded that children in the age range of 12-15 years had prevalence of 33.3% followed by 8-11 years of 23.2%, 4-7 years of 21.2% and 1-3 years of 22.2%.<sup>4</sup> Teeth fractures increases with the age and are more prevalent in permanent teeth (58.6%) than in primary dentition (36.8%).<sup>5</sup> A survey conducted by Govindarajan et al in 2012 among school children aged 3- 13 years at Chidambaram, Tamil Nadu revealed the prevalence of teeth fracture to be 10.13%.<sup>6</sup>

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Fracture of teeth may result in pain, loss of function, and it could unfavorably affect the developing occlusion and aesthetics. These situations could have a negative impact on quality of children's life.<sup>2</sup> In Brazil, a study determined that children with fractured teeth were 20 times more likely to suffer an adverse impact on their quality of life than children without fracture of teeth, and this encompassed emotional effects. Hence oral health problems have been progressively predicted as important sources of impact on the quality of life of individuals and society.<sup>7</sup>

Oral diseases and disorders can have an impact on the quality of life of preschool children and their parents, affecting their oral health and wellbeing. Furthermore, oral health is considered a mirror of general health and according to Sheiham "the compartmentalization involved in viewing the mouth separately from the rest of the body must cease because oral health affects general health".<sup>8</sup>

Nagpal R & Shell H (1985) defines Quality of life (QoL) as "a composite measure of physical, mental and social wellbeing as perceived by each individual or by group of individuals - that is to say, happiness, satisfaction and gratification as it is experienced in such a life concerns as health, marriage, family work, financial situation, educational opportunities, self-esteem, creativity, belongingness, and trust in others."<sup>9</sup>

Oral health-related quality of life (OHRQoL), a multidimensional paradigm that blows an individual's well-being, is increasingly being predictable as an integral part of general health. It can play an important role in understanding subjective evaluations of patient and experience with oral health care as well as determining needs assessment. The need to determine the impact of oral health problems on people's QoL led to the development of various instruments for assessing the OHRQoL, which have been used with increasing frequency in dental

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research as they provide a better understanding of treatment needs and outcomes from the patient's perspective. Such instruments can also aid in clinical decision-making and monitor a patient's condition. Thus, incorporating OHRQoL instruments into clinical practice and research can have important benefits for individual patients, community-based dental practices, clinical research, and potentially public health policy.<sup>10</sup>

OHRQoL of children remained under researched and formed the objective for several researchers thereby introduction of several tools for its assessment. A few most commonly used tools for assessment of Child OHRQoL includes the CPQ (Child Perception Questionnaire) for the age groups 8–10 years and 11–14 years developed by Jokovic et al in 2002, the COIDP (Child Oral Impacts on Daily Performances) developed by Gherunpong et al in 2004, the COHIP (Child Oral Health Impact Profile) developed by Broder et al in 2007, and the ECOHIS (The Early Childhood Oral Health Impact Scale) developed by Pahel et al in 2007.<sup>7</sup>

COHIP developed by Broder et al is one of the modern instruments for assessing QoL in children and is the first children's OHRQoL measure to incorporate positive and negative health impacts. The validation of the instrument has been done through multistage process that included psychometric testing, application in descriptive studies of patient populations, caregiver proxy, and child comparison as well as construct validity tested with other psychometric instruments related to well-being and psychological factors.<sup>10</sup>

Acquaintance of the impact of anterior teeth fracture on children's QoL is scarce.<sup>7</sup> Ramos et al found a statistically significant association between the presence of traumatized treated teeth and children's OHRQoL on southern Brazil adolescents.<sup>11</sup> A study by Bendo et al among 11-to-14 year-old Brazilian school children using the

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CPQ, showed no statistical difference in impact of OHRQoL between treated/untreated teeth fracture and without teeth fracture and also reported that children with untreated teeth fracture experienced a negative impact on social well-being , mainly with regard to avoiding smiling or laughing, and in being concerned about what other people think or say.<sup>12</sup> Bagchi, et al in 2015 assessed the impact of teeth fracture on OHRQoL among 12 year old school going children at Lucknow. Among the 492 study participants screened 53 reported with tooth fracture and assessment with CPQ revealed tooth fracture had negative impact on OHRQoL of children thereby affecting their personal relationships and school performance.<sup>13</sup>

The psycho-social impact caused by permanent anterior teeth fracture among school going children remains unexplored in south India. The metropolitan of Chennai is the fourth-most populous urban agglomeration in India and the second largest city in south India.<sup>14</sup> According to census 2011, 10.08% of its population are school going children<sup>15</sup> and a significant proportion of dental trauma relating to sports, unsafe playgrounds or school environment, road accidents or violence tend to occur among this section of population. Hence a cross sectional survey was planned among the 8-15 years old school children of Chennai metropolitan city to assess the psycho-social impact of permanent anterior teeth fractures using the COHIP thereby interpreting its effects on OHRQoL.

# **REVIEW OF LITERATURE**

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## **REVIEW OF LITERATURE**

Teeth fracture is one of the major public health concern due to their impact on children' daily lives. The measures of QoL have a very important role in clinical practice in terms of identifying needs, selecting best therapies, monitoring patients' progress and helping clinicians to understand the magnitude of benefits that come with the treatment of oral conditions.

Many studies that assess the relationship between OHRQoL and tooth fracture in permanent teeth have been reported. The succeeding are the previous studies reviewed correlating impact of trauma to tooth on OHRQoL in both primary and permanent dentition of the children.

*Cortes et al [2002]* conducted a population-based matched case-control study in which the cases were 68 children 12–14 years old, having non-restored teeth, with fracture involving dentine. The controls were 136 children without any TDI. They were matched by age, sex and socio-economic status. The Oral Impact on Daily Performances (OIDP) index was used to measure the impacts. The results showed that children with fractured teeth were 20 times more likely to report any impact on their daily living than children with noTDI.<sup>16</sup>

*Locker D. [2007]* conducted a study in two phases: a clinical examination of children and a follow-up phase in which selected children and their parents were asked to complete questionnaires concerning oral health and its psychosocial impact to assess socioeconomic disparities in the OHRQoL in a group of 11-14 years Canadian children. Children with dental trauma and a comparison group of trauma-free children were selected for follow-up. Their parents were mailed a questionnaire

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concerning the child's personal and family characteristics and also a questionnaire for the child that contained a short form of the CPQ<sub>11-14</sub>. He stated that there were socioeconomic disparities in OHRQoL in which the highest mean CPQ<sub>11-14</sub> scores were observed among low income children .<sup>17</sup>

**Ramos-Jorge et al [2007]** conducted a case control study among 40 adolescents from 11 to 17 years of age in Southern Brazil. The control group was made up of 160 adolescents with no history of dental trauma and belonging to the circle of friends of the participants of the case group, matched by gender, age, and socioeconomic level. The impact was assessed through the Oral Impact on Daily Performances (OIDP). They observed that the odds ratio of adolescents treated for EDFs (Enamel-dentine fractures) of presenting an impact on daily activities was 3.3 times greater than among adolescents without dental trauma .<sup>11</sup>

**Fakhruddin et al [2008]** outlined a population-based, matched case-comparison study to assess the impact of dental trauma on QoL in 30 schools in two Ontario communities in Canada. Cases (n = 135) were children with evidence of previous dental trauma. Controls (n = 135) were classmates matched for age and gender. OHRQoL was assessed using CPQ<sub>11-14</sub>. Untreated children experienced more chewing difficulties (p = 0.026), avoided smiling (p = 0.029) and experienced affected social interactions (p = 0.032) compared with their non-injured peers. Therefore those with untreated dental injuries experienced a higher risk of negative social impact on their daily living than those without injury.<sup>18</sup>

**Berger et al [2009]** proposed to quantify the perception of the dental injury produced pain and its treatment using visual analogue scale tested in children and parents for a year following severe injuries in children of aged 8-14 years

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and their families by using Child oral health related quality of life (COHQoL) questionnaires. The COHQoL demonstrated a profound and continuing effect on children and their parent's QoL following severe dental injury and also at the end of one-year. Children were still affected by the social and well-being aspects of the injury.<sup>19</sup>

**Bendo et al [2010]** conducted a cross-sectional study to investigate the association between treated/untreated TDI and the impact on the QoL of 1612 Brazilian schoolchildren of aged 11-to-14 year-old. OHRQoL was assessed using the Brazilian version of the CPQ<sub>11-14</sub> - Impact Short Form (ISF: 16), composed of 16 items and self-administered by all children. The results showed that the children with an untreated TDI were 1.4-fold more likely to report impact on the item "avoided smiling/laughing" than those without TDI.<sup>12</sup>

**Aldrigul et al [2011]** carried out a cross-sectional study to assess the impact of TDIs and anterior malocclusion traits on the OHRQoL of children between 2 and 5 years-old. OHRQoL was measured using the ECOHIS on which the parents of 260 children answered the six domains of the scale. The presence of anterior malocclusion traits did not show a negative impact on the overall OHRQoL mean or in each domain but the presence of complicated TDIs showed a negative impact on the symptoms ( $p = 0.005$ ), psychological ( $p = 0.029$ ), self-image/social interaction ( $p = 0.004$ ) and family function ( $p = 0.018$ ) domains and on the overall OHRQoL mean score ( $p = 0.002$ ).<sup>2</sup>

**Piovesan et al [2011]** in their cross sectional study assessed the relationship of COHRQoL and socioeconomic backgrounds to TDIs in 792, 12 year old Brazilian schoolchildren by using CPQ<sub>11-14</sub> questionnaire. They concluded that

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the socioeconomic indicators are not associated with dental trauma in school children and this oral health condition has no negative impacts on children's QoL.<sup>20</sup>

*Traebert et al [2012]* carried out a cross sectional study to determine the association between TDI and OHRQoL among 409 Brazilian schoolchildren aged 11–14 years. Dental caries in anterior teeth and malocclusion status were also collected according to World Health Organization (WHO) criteria. OHRQoL was assessed using the short form of the Child Perceptions Questionnaire (CPQ<sub>11–14</sub>). The results stated that the prevalence of one or more adverse impacts occurring often/very often according to overall CPQ<sub>11–14</sub> scale was 46.6%. The prevalence for the oral symptoms domain was 29.5%, for the functional limit was 25.3%, for the emotional wellbeing was 17.6%. The mean CPQ<sub>11–14</sub> score was significantly higher among those who had TDI.<sup>7</sup>

*Maria Siqueira et al [2013]* reported that the prevalence of negative impact from dental injury on QoL was 31.1% among the children and 24.7% among the families. Parents/caregivers were asked to complete the Brazilian version of the Early Childhood Oral Health Impact Scale (B-ECOHIS). TDI was not associated with a negative impact on QoL among 814 Brazilian schoolchildren aged 3-5years old.<sup>21</sup>

*Cláudia Marina Viegas et al [2014]* carried out a cross sectional study to evaluate the impact of TDI on the OHRQoL of 1632 Brazilian preschool children and their families of both sexes aged 60–71 months in the city of Belo Horizonte, Brazil. Data on OHRQoL were collected using the B-ECOHIS, which was self-administered by parents/caregivers. The prevalence of negative impact from oral conditions on QoL was 36.8% and 31.4% for children and families respectively. TDI in Brazilian preschool children has no impact on QoL of the children or their families.<sup>22</sup>



**Ramos-Jorge et al [2014]** carried a study to compare the impact of treated TDI, untreated TDI, and absence of TDI on the QoL of 668 Brazilian school children aged 11–14 years. The impact of TDI on quality of life was assessed using the COIDP. School children with untreated TDI experienced a greater impact on eating ( $p = 0.016$ ) and smiling ( $p < 0.001$ ) in comparison with those without TDI.<sup>23</sup>

**Bagchi et al [2015]** conducted a cross sectional study to assess the impact of TDI on OHRQoL among 492 12-year-old school going children of Lucknow, India. The participants completed the CPQ<sub>11–14</sub> impact short form. The results suggest that the OHRQoL had statistically significant association with TDI and therefore TDI has a negative impact on OHRQoL of children affecting their personal relationships and school performance.<sup>13</sup>

**Freire-Maia et al [2015]** performed a cross sectional study using a representative sample of 1,201 schoolchildren, 8–10years-old, from public and private schools of Belo Horizonte, Brazil. The CPQ<sub>8–10</sub> was used to assess OHRQoL, dichotomized in low and high impact. The prevalence of a negative impact on OHRQoL in children with severe trauma was 55.9%. The TDI negatively impacted emotional and social domains of OHRQoL.<sup>24</sup>

**Shruti Golai et al [2015]** conducted a randomized controlled hospital based study to assess the impact of these injuries on the oral health status, OHRQoL based on the child's perception, parent perception and correlation between the child's oral health status with their smiling pattern in 58 children in the age group of 5–15 years in Bengaluru city, India. They found that the children suffering from trauma to anterior teeth had more effects on the emotions, the self-confidence and social interaction than children without any traumatic injury.<sup>25</sup>

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*Vieira-Andrade et al [2015]* suggested that the TDI had no impact on the QoL of 335 preschool children, 3-5 years of age, enrolled at public and private preschools in the city of Campina Grande, Brazil.<sup>26</sup>

*Feldens et al [2016]* in their cross-sectional study found that the enamel fractures have no significant impact on young children's QoL. Parents were interviewed on their perception of their child's OHRQoL by using ECOHIS and their sociodemographic background. Thus outcomes suggested that the including enamel fractures within the diagnosis of TDI increases the prevalence of TDI while reducing the OHRQoL impact of TDI for the primary dentition of 1275 children aged 1-5 years attending public nurseries in Canoas, Brazil.<sup>27</sup>

# **AIM AND OBJECTIVES**

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## **AIM AND OBJECTIVES**

### **AIM:**

The aim of this study is to assess the various factors influencing permanent anterior teeth fractures and its impact on OHRQoL among 8-15 years old school children of Chennai city.

### **OBJECTIVES:**

1. To assess the prevalence of permanent anterior teeth fractures of school children in Chennai city.
2. To assess various factors influencing anterior tooth fractures to permanent teeth.
3. To classify the anterior teeth fractures based on Ellis and Daveys classification (1970).
4. To assess the oral health factors influencing anterior teeth fractures and OHRQoL using WHO oral health assessment form (1997).
5. To assess the impact of anterior teeth fractures of permanent teeth on OHRQoL among school children using COHIP by Hillary L. Border and Wilson-Genderson (2007).

# **MATERIALS AND METHODS**

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## MATERIALS AND METHODS

### 1. STUDY DESIGN:

A cross-sectional survey was carried out to assess the permanent anterior teeth fractures and its impact on OHRQoL among 8-15 year old school children.

### 2. SETTING:

#### a. Study setting and location:

The study was conducted among the 30 randomly selected schools (Corporation, Government aided and Private) of Chennai city.

#### b. Period of recruitment:

The duration of the study was 12 months from December 2015 to November 2016 with recruitment of participants from June 2016 to October 2016.

#### c. Data collection:

The case record form was used for the recording of the following data collected in the study.

1. Socio-demographic data
2. Questionnaire assessing various factors influencing permanent anterior teeth fractures
3. Ellis and Davey's classification (1970)<sup>28</sup> of anterior teeth fractures.
4. WHO Oral health assessment form (1997)<sup>29</sup> for the assessment of oral health factors influencing permanent anterior teeth fractures and OHRQoL.
5. COHIP by Hillary L. Border and Wilson-Genderson (2007) for assessment of OHRQoL.<sup>10</sup>

**d. Instruments used for examination:**

- Instruments used for Type III examination
  1. Disposable examination gloves
  2. Disposable face masks
- Instruments used for Type III examination:
  1. Stainless steel mouth mirrors.
  2. Shepherd's hook explorer
  3. CPITN probe.
  4. Tweezer
  5. Cotton
  6. Cotton holder
  7. Disposable examination gloves
  8. Disposable face mask
  9. Red biomedical waste bags

**3. PARTICIPANTS:**

The study participants comprised of school going children aged 8-15 years with anterior teeth fractures of permanent teeth from the sampled schools.

***Operational definition for tooth fracture:***

Tooth fracture includes clinically diagnosable fracture of enamel, dentine, pulp, crown en masse, non-vital teeth, displaced teeth and teeth lost due to trauma caused by falls, assaults or accidents.

**Eligibility criteria**

- **Inclusion criteria:**
  1. School children aged 8-15 years.

2. School children with permanent anterior teeth fractures.
3. School children who were present on the day of examination.

- **Exclusion criteria:**

1. Subjects with known systemic diseases.
2. Physically and mentally challenged children.

***b. Sources and methods of selection of participants***

According to the 2011 Indian census, Chennai is the fourth-largest city and fourth-most populous urban agglomeration in India. The city together with the adjoining regions constitute the Chennai Metropolitan Area, which is the 36<sup>th</sup> largest urban area by population in the world.<sup>14</sup> The Chennai Municipal Corporation has been divided into 10 zones (Annexure 1). According to the source of information collected from Corporation office and Directorate of Public Instruction (DPI), Chennai in April 2016, there were 27 Government schools, 298 Corporation schools, 351 Government aided and 361 Private schools in Chennai city. As the study intends to assess the permanent anterior teeth fracture among urban school children, purely government schools and the schools in the city outskirts were not included and a total of 1010 schools were considered for sampling. 30 schools were randomly selected by stratified random sampling with proportionate selection of 1 Corporation, 1 Government aided and 1 private school from each of the 10 zones of corporation of Chennai (Annexure 2). This was followed by a school survey in which all the students aged 8-15 years were screened for permanent anterior teeth fractures and those children who met the eligibility criteria constituted the study population.

**4. VARIABLES:**

The variables assessed in the cross sectional survey includes,

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1. *Prevalence of permanent anterior teeth fractures:* All school children of aged 8-15 years of the selected school were screened for presence of any permanent anterior teeth fracture as per the operational definition and the prevalence was calculated as proportion.

2. *Various factors influencing anterior teeth fractures:* A customized structured questionnaire comprising of 7 questions, was formed to assess the awareness of occurrence of trauma, perceived tooth affected due to the trauma, days elapsed since trauma without being treated, history of any treatment undertaken, cause of trauma, specific reason for occurrence of trauma and the place where the trauma had occurred.

3. *Type of fracture:* Type of fracture was assessed based on Ellis and Davey's classification (1970).<sup>28</sup> The classification categorizes fractures into 9 types. Type VI fracture representing fracture of root with or without loss of crown structure cannot be assessed through type III examination and requires a radiograph, hence was not considered for evaluating anterior teeth fracture. Type IX fracture was also not considered for evaluation as it is the tooth fractures involving deciduous teeth and hence do not fit the eligibility criteria of the study.

4. *Oral health status:* This is assessed using the WHO basic oral health survey methods assessment form (1997).<sup>29</sup>

5. *Impact of teeth fractures on OHRQoL:* This was assessed using COHIP by Hillary L. Border and Wilson-Genderson (2007).<sup>10</sup>

**Child Oral Health Impact Profile (COHIP) by Hillary L. Border and Wilson-Genderson (2007)<sup>10</sup>**

The original COHIP is a structured pretested questionnaire consisting of 34 items, forming five conceptually distinct subscales: Oral health wellbeing,

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Functional wellbeing, Social-emotional wellbeing, School environment, and Self-image. From the original COHIP, the Items 2, 5, 8 and 10 were removed and customized such that the questionnaire could be used to assess OHRQoL of tooth fractures and cannot be applied for other oral diseases.

**1. Oral health wellbeing:**

A total of 6 questions (Item 1, 3, 4, 6, 7 and 9) assesses oral health wellbeing through assessment of specific measures of oral symptoms that occur due to trauma to teeth such as pain, sensitivity, discolored teeth, sore spots on teeth etc. The scores may range from 0 to 24. Higher scores reflect positive oral health wellbeing and lower scores reflect negative oral health wellbeing.

**2. Functional wellbeing:**

A total of 6 questions (Item 11, 12, 13, 14, 15 and 16) relate to the child's ability to carry out specific everyday tasks or activities for example sleeping, cleaning teeth, speaking clearly, chewing etc. The scores may range from 0 to 24. Higher scores reflect positive functional wellbeing and lower scores reflect negative functional wellbeing.

**3. Social - Emotional wellbeing:**

A total of 8 questions (Item 17, 18, 19, 20, 21, 22, 23 and 24) assesses the peer interactions, withdrawn feelings such as being unhappy, sad, worried, anxious, shy and mood states of the school children associated with permanent anterior teeth fracture. The scores may range from 0 to 32. Higher scores represent positive social-emotional wellbeing and lower scores represent negative social-emotional well-being.

**4. School Environment:**

A total of 4 questions (Item 25, 26, 27 and 28) refer to tasks associated with the school environment which measures the absence from school, attention deficit and other academic deficiency at school due to teeth fractures. The scores range from 0 to 16. Higher scores represent positive school environment and lower scores represent negative school environment.

**5. Self-Image:**

A total of 6 questions (Items 29, 30, 31, 32, 33, and 34) addresses the positive feelings of a child affected with permanent anterior teeth fracture. It assesses the feeling of confidence and beliefs regarding the child's teeth. Scores may range from 0 to 24. Higher scores represent positive self-image and lower scores represent negative self-image.

A translation of the above questionnaire was done in the local language (Tamil) and was validated by bilingual scholars and was pretested (Cronbach's alpha 0.84).

***Interpretation of the score:***

Response format:

<b>Score</b>	<b>Response</b>
0	Never
1	Almost never
2	Sometimes
3	Fairly often
4	Almost all of the time

Among the 30 item questionnaire, 24 items were negative worded and 6 items were positive worded. Scoring of the negatively worded items of the questions in the domains of oral health wellbeing, functional wellbeing, social-emotional wellbeing and school environment were reversed, while scoring of the positively

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worded items in self-image were not. For example reversal is done for negative worded item as follows: if the response is “never” = 0, the score is reversed as 4 and if the response is “almost never” = 1, the score is 3. In case of positively worded items (Item 29, 30, 31, 32, 33 and 34) of self-image, the score is considered as it is i.e. score of “fairly often” = 3 is 3. The sum of individual item scores for each of the subscales was obtained followed by a grand total of the scores for assessment of OHRQoL. The total score for OHRQoL may range from 0 to 120. Higher COHIP scores reflect positive OHRQoL and lower scores reflect negative OHRQoL.

## **5. DATA SOURCES/MEASUREMENTS:**

Ethical clearance was obtained from the Institutional Review Board of Tamil Nadu Government Dental College and Hospital, Chennai. The permissions to conduct the survey in the schools were obtained from the Deputy Commissioner of Education Board, Chennai Corporation and the Chief Educational Officer, Panagal building, Saidapet, Chennai (Annexure 3). Intra examiner variability of the chief investigator for assessment of tooth fractures was done on a sample of 30 children with various type of tooth fracture at the Department of Public Health Dentistry (Kappa coefficient is 0.99). Prior notification of the survey at the selected schools was done in person by the chief investigator and the feasible date was fixed for screening and for participant recruitment. A written informed consent was obtained from both the parents/guardians and the participating school children and the information sheet regarding the survey was given to all parents.

Oral screening for the presence of permanent anterior teeth fracture was carried out by the chief investigator at school, during school hours by Type IV examination under natural light. All school children aged 8-15 years diagnosed with

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permanent anterior tooth fracture by oral screening comprised the study participants.

The instruments used for the survey were sterilized at the Department of Public Health Dentistry, Tamilnadu Government Dental College and Hospital and transported in sterile pouches to the study setting. The waste generated at the study setting was disposed in red biomedical waste bags at the affiliated dental institute.

Oral examination was done by Type III examination and universal precautions were undertaken. Case record with an individual serial number was used to record the sociodemographic data, various factors influencing tooth fractures, type of fracture, oral health status of each study participant.

The 30 item pretested, customized, structured questionnaire for the assessment of OHRQoL was administered to the study participants either in English or in local language as per the requirements of the child. The scores were interpreted and the data obtained in the survey was tabulated in Microsoft office Excel 2013(Annexure 4).

## **6. STUDY SIZE:**

Sample size was calculated with power of study as 90% and alpha error at 5%. The minimum sample estimated by prevalence of permanent anterior teeth fracture from previous studies was calculated to be 138.2. After completion of the survey the study sample consisted of 628 study participants.

Sample size was calculated using the formula

$$n = \frac{Z (1- \alpha/2)^2 p (1-p)}{d^2}$$
$$n = \frac{(1.96)^2 \times 0.10 (1-0.10)}{(0.05)^2} = 138.2$$

$Z_{1-\alpha/2}$  = standard normal variate at 5% type I error (i.e., 1.96)

$p$  = Expected proportion of children with permanent anterior teeth fracture based on the prevalence rate of previously mentioned study.<sup>6</sup>

$d$  = Absolute error or precision

## **7. STATISTICAL METHODS**

The data tabulated in Microsoft office Excel 2013 was analyzed using IBM Statistical Package for Social Sciences (SPSS) version 22.0, Armonk, NY: IBM Corp.2013. Descriptive statistics was performed to characterize the sample and demonstrate the distribution of COHIP items. The Normality tests Kolmogorov-Smirnov and Shapiro-Wilks tests were performed to assess the normal distribution of the data. It revealed that some variables followed normal distribution and some did not. Therefore to analyse the data both parametric and non-parametric methods were applied. To compare proportions between groups with qualitative variables Chi-square test was applied and if any expected cell frequency was less than five then Fisher's exact test was used. To compare the mean values between school types one way ANOVA was applied followed by Tukey's HSD post hoc tests for multiple pairwise comparisons. For variables which do not follow normal distribution, to compare between school types Kruskal Wallis test was used followed by Bonferroni adjusted Mann Whitney test for multiple pair wise comparison. Significance level was fixed as 5% ( $\alpha = 0.05$ ).

### ஆராய்ச்சி பற்றிய தகவல் படிவம்

தமிழ்நாடு அரசு பல் மருத்துவக் கல்லூரி மற்றும் மருத்துவமனை-சென்னை 3

சமுதாய பல் பாதுகாப்பு பிரிவு

நான் முரு. க. பிரியா தீபா லட்சுமி தமிழ்நாடு அரசு பல் மருத்துவக் கல்லூரி மற்றும் மருத்துவமனையில் சமுதாய பல் பாதுகாப்பு பிரிவுவில் பயிலும் இரண்டாம் ஆண்டு முதுகலை மாணவி. விளக்கவுரை எனது பாடதிட்டதின் ஒரு பகுதியாகையால் **நிரந்தர முன் பற்களின் முறிவுகளும் அதனால் வாய் நலம் சார்ந்த வாழ்க்கை தரத்தில் ஏற்படும் தாக்கத்தை பற்றி சென்னையில் உள்ள 8-15 வயதுடைய பள்ளி மாணவர்களிடையே ஒரு குறுக்குப்பிரிவு ஆய்வு** பற்றி நான் விளக்கவுரை செய்ய உள்ளேன். இந்த ஆய்வு முழுவதும் எனது பேராசிரியர் மற்றும் துறை தலைவராகிய மருமபா.அஸ்வத் நாராயண் **B.Sc,MDS** வழிநடத்துதலின் கீழ்செய்யப்படுகிறது.

#### ஆராய்ச்சி தலைப்பு:

நிரந்தர முன் பற்களின் முறிவுகளும் அதனால் வாய் நலம் சார்ந்த வாழ்க்கை தரத்தில் ஏற்படும் தாக்கத்தை பற்றி சென்னையில் உள்ள 8-15 வயதுடைய பள்ளி மாணவர்களுக்கிடையே ஒரு குறுக்குப்பிரிவு ஆய்வு.

#### 1.ஆராய்ச்சியின் தன்மை

இந்த ஆய்வின் நோக்கம் நிரந்தர முன் பற்களின் முறிவுகளும் அதனால் வாய் நலம் சார்ந்த வாழ்க்கை தரத்தில் ஏற்படும் தாக்கத்தை பற்றி சென்னையில் உள்ள 8-15 வயதுடைய பள்ளி மாணவர்களுக்கிடையே நடத்தும் ஒரு மதிப்பீடு.

#### 2.ஆராய்ச்சியின் நோக்கம்

உலகளவில் 16-40 சதவீதம் குழந்தை பருவத்தினர் மற்றும் வளர் இளம் பருவத்தினர் பல் முறிவுகளால் பாதிக்கப்படுகின்றனர் என்று நோய்விபரவியல் புள்ளி விவரம் குறிக்கிறது. இந்த பல் முறிவுகள் பால் பற்களைவிட நிரந்தரப் பற்களில் மிக அதிகமாக காணப்படுகிறது. வணிக நாடுகளின் கண்டுபிடிப்பின்படி நோய்தாக்குதலின் அதிகரிப்பு 6 வயது குழந்தைகளின் இடையே 16-40 சதவீதம் மற்றும் 12 வயது குழந்தைகளின் மத்தியில் 4-33 சதவீதம் என்று காணப்படுகிறது. சிதம்பரத்தில் 10 பள்ளிகளில், 3-13 வயதினரிடையே நடத்தப்பட்ட ஆய்வுவில் 10-13 சதவீதம் குழந்தைகள் பல் முறிவால் தாக்கப்பட்டுள்ளதாக ஆய்வு முடிவுகாணப்படுகிறது. இந்த அதிர்ச்சிகரமான பற்காயங்கள் உடல் உணர்வு மற்றும் உளவியல் அளவில் வேதனைமிக்க அனுபவத்தை உண்டாக்கிறது. கூடுதலாக இந்த பற்காயங்கள் செயல்பாடு இழப்பு வளறும் பற்களிடையே சாதகமற்ற இடையுறுமற்று அழகுணர்வில் பாதிப்பை ஏற்படுத்துகிறது. இந்த சந்தர்ப்பத்தில் வாழ்க்கையின் தரத்தில் எதிர்மாற தாக்கத்தை ஏற்படுத்தும் பெருகிவரும் பொதுகாயங்கில் பற்காயங்கள் சிறிய அளவு முக்கிய பங்கு வதிக்கிறது. வளரும் நாடுகளின் பல் சொத்தை மற்றும் வாய்முகு பிளவு நோய்கள் மாறாக வாய்வழி பல் அதிர்வு நோகளை பற்றிய நம்பகமான தகவல்கள் இன்னும் குறைவாக உள்ளது. இளம் குழந்தைகளிடையே பல் அதிர்வு நோயால் உளவியல் மற்றும் உணர்வுப்புரமான தாக்கத்தால் ஏற்படும் உணர்ச்சிகள் பற்றிய நிலை குறைந்த அளவே அறியப்படுகிறது.

#### 3.ஆராய்ச்சி வழிமுறைகள் மற்றும் பங்களிப்பு நேரம்

தற்போதைய ஆய்வை நடத்த சும்பந்தப்பட்ட பள்ளி அதிகாரிகளிடம் அனுமதி பெறப்படும்.இந்த ஆய்வின் நோக்கத்தை ஆய்வில் பங்கேற்பவர்களிடும் அவர்களின் பெற்றோர் அல்லது பாதுகாவலரிடும் தெளிவாக குறப்படும்.பெற்றோர் அல்லது பாதுகாவலரிடம் முறையான கைப்பட அனுமதி பெறப்படும். தற்போதைய ஆய்வு பள்ளி செல்லும் 8-15 வயதினரிடையே நடத்தப்படும். பற்காயங்கள் உள்ள தலைமை ஆராய்ச்சியாளரால் தடைகாப்பு விசாராணை பள்ளியில், பள்ளி நேரங்களில் நடத்தப்படும். அன்றைக்கு தேவையான நோய் நுண்மங்கள் ஒழிக்கப் பெற்ற கருவிகள், நோய் நுண்மங்கள் ஒழிக்கப்பெற்ற பைகளில் எடுத்துச் செல்லப்படும். தினமும் உபயோகப்படுத்தப்பட்ட கருவிகளுக்கு பதிலாக புதிய நோய் நுண்மங்கள் ஒழிக்கப்பெற்ற கருவிகள்

பயன்படுத்தப்படும். குழந்தைகளை எலிஸ் மற்றும் டேவிஸ் வகைப்படுத்துதல படுவர். அவர்கள் பதிவு வடிவம் முறைப்படி மதிப்பிடப்படுவர்.

#### 4.பக்கவிளைவுகள்

இந்த ஆராய்ச்சி நன்கு பயிற்சி பெற்ற பல் மருத்துவரால் அளிக்கபடுகிறது. ஆதலால் எந்த வித பாதிப்பும் ஏற்பட வாய்ப்பு இல்லை .

#### 5.நன்மைகள்

சென்னையில் பள்ளி மாணவர்களுக்கிடையே பற்காயங்களால் ஏற்படும் வாய் நலம் சார்ந்த வாழ்க்கை தரத்தின் விளைவுகள் தாக்கத்தை வெளிப்படுத்துகிறது. இதனால் குழந்தைகளுக்கு ஆரம்ப காலத்திலேயே சிறந்த பற்சிகிச்சை அளித்து அவர்களின் வாழ்க்கை தரத்தினை சீராக்க முடியும்.

#### 6.தகவல்இரகசியம்

கலந்துக்கொள்ளும் நோயாளிகளுக்கு வரிசை எண் தரப்படும் மற்றும் அவர்களின் குறிப்புகள் ஆராய்ச்சி முடியும் வரை பிறர் அறியாவண்ணம் இரகசியமாக பாதுகாக்கப்படும். அதை வெளியிடும் நேரத்தில் எந்த நோயாளியின் தனி அடையாளங்களும் வெளியிட படமாட்டாது .

#### 7.தனிச்சையில்லாத பங்கேற்றல்

இந்த ஆராய்ச்சியில் பங்கு பெறுவது உங்களின் தனிப்பட்ட முடிவாகும். இது நோயாளிகள் தானாகவே பங்களிக்கும்பட்சத்தில் பயணப்படி தரப்படாது. இந்த ஆராய்ச்சியிலிருந்து நீங்கள் எப்பொழுது வேண்டுமானாலும் விலகிக் கொள்ளலாம். இது உங்களுக்கோ அல்லது ஆராய்ச்சியாளருக்கோ எந்தவித பாதிப்பும் ஏற்படுத்தாது என்பதை தெரியப்படுத்துகிறோம்.

#### தொடர்பு விவரங்கள் :

#### முதன்மை ஆய்வாளரின் தொடர்பு விவரங்கள் :

மரு.க. பிரியா தீபா லட்சுமி.

இரண்டாம் ஆண்டு முதுகலை மாணவி

சமுதாய பல் பாதுகாப்புப் பிரிவு

தமிழ்நாடு அரசு பல் மருத்துவக் கல்லூரி மற்றும் மருத்துவமனை

சென்னை-600 003.

#### பங்கேற்பவர்களின் உரிமை பற்றி அறிய தொடர்பு கொள்ள :

தலைவர்

நிறுவன நெறிமுறைக்குழு

தமிழ்நாடு அரசு பல் மருத்துவக் கல்லூரி மற்றும் மருத்துவமனை

சென்னை-600 003.

பெயர் :

கையொப்பம் / கைரேகை

தேதி :

பங்கேற்பாளர்/ பெற்றோர்/ பாதுகாவலர்

மரு.க.பிரியா தீபா லட்சுமி

தேதி :

ஆராய்ச்சியாளர்



**TAMILNADU GOVERNMENT DENTAL COLLEGE AND HOSPITAL CHENNAI -3**  
**DEPARTMENT OF PUBLIC HEALTH DENTISTRY**  
**INFORMATION SHEET**

**INTRODUCTION OF THE CHIEF INVESTIGATOR**

I Dr. K. Priya Deepa Lakshmi doing II year post graduation in Department of Public Health Dentistry at Tamil Nadu Government Dental College and Hospital, Chennai. As dissertation is my part of my PG curriculum, I would like to do my dissertation regarding “ **Permanent anterior teeth fractures and its impact on oral health related quality of life among 8-15 years old school children of Chennai city - A cross-sectional survey**”. All this work will be carried out under the guidance of my Professor and Head, Department of Public Health Dentistry, Dr. M.B. Aswath Narayanan B.Sc, MDS.

**STUDY TITLE**

**PERMANENT ANTERIOR TEETH FRACTURES AND ITS IMPACT ON ORAL HEALTH RELATED QUALITY OF LIFE AMONG 8-15 YEARS OLD SCHOOL CHILDREN OF CHENNAI CITY - A CROSS-SECTIONAL SURVEY**

***1. Nature of study***

The aim of this study is to assess the various factors influencing permanent anterior teeth fractures and its impact on OHRQoL among 8-15 years old school children of Chennai city.

***2. Purpose of study***

Globally epidemiological statistics indicates that 36% of the individuals suffer from tooth fractures during childhood and adolescence. Traumatic dental injuries are more prevalent in permanent (58.6%) than in primary dentition (36.8%). The commercial countries discovered that the prevalence of dental traumatic injuries is on the increase and as fluctuating from 16-40% and 4-33% among 6-year-old and 12 year old children respectively. A study found a prevalence of 10.13% of dental trauma among children aged 3-13 years from 10 schools at Chidambaram in Tamil Nadu. Traumatic injury is a distressing experience on physical level, but it may also have an effect on emotional and psychological levels. Additionally, TDI may result in pain, loss of function, and it could unfavourably affect the developing occlusion and aesthetics. These situations could have a negative impact on quality of life on the children lives. In contrast to dental caries, periodontal disease and orofacial clefts reliable data on the frequency and severity of oro-dental trauma are still lacking in most of the developing countries. Thus, little is known regarding the feelings of children with TDI or the emotional and psychological impact of this condition on young children. Hence the aim of this study is to assess the various factors influencing permanent anterior teeth fractures and its impact on OHRQoL among 8-15 years old school children of Chennai city.

***3. Procedure and duration of participants***

Authorised permission will be obtained from the concerned school authorities to conduct the present study. The study participants and their parents/guardian will be clearly informed about the purpose of the study. Written informed consent will be obtained from both parents/legal guardians and from the childrens. The present study is planned to be conducted among school children aged 8-15 years. Examination will be carried out by the chief investigator at school during school hours. The number of sterilized instruments required to screen the appropriate number of participants per day will be transported in separate sterilized pouches. The used instruments will be replaced with a new set of sterilized instruments every

day. The children shall be screened for tooth fractures and shall be categorized based on Ellis and Davey's classification (1970). Then the children reporting with tooth fracture will undergo further assessment

#### **4. Risks**

There are no potential risks in the present study.

#### **5. Benefits**

The prevalence of tooth fracture of permanent teeth and their impact on quality of life will be determined among school children in Chennai city. This facilitates children's access to dental care services earlier in their life, in order to avoid a later negative impact on their quality of life.

#### **6. Confidentiality**

The data collected from the participants are maintained confidential by the investigator. A code is assigned to each participant immediately after recruitment to ensure that their identity is not revealed throughout the study.

#### **7. Voluntary participation**

Taking part in the study is voluntary. You are free to choose whether to participate in the study or to withdraw at any time; your decision will not result in any loss of benefits to which you are otherwise entitled.

### **CONTACT DETAILS**

#### ***Contacts details of the principal investigator:***

Dr. K. Priya Deepa Lakshmi,  
II<sup>nd</sup> year Post Graduate,  
Room No- 4, Department of Public Health Dentistry,  
Tamilnadu Government Dental College & Hospital,  
No -2, Frazer Bridge Road, Chennai-600003.  
Phone number: 9952131713

#### ***Contact details regarding rights of the participant.***

The Chairperson,  
Institutional Ethics Committee,  
Tamilnadu Government Dental College & Hospital,  
Chennai.

Name of Participants:

Investigator :

Date:

Signature/ Thumb impression of  
Parent/Guardian

வரிசை எண் :

தமிழ்நாடு அரசு பல் மருத்துவக் கல்லூரி மற்றும் மருத்துவமனை-சென்னை-3  
சமுதாய பல் பாதுகாப்பு பிரிவு  
ஆராய்ச்சி ஒப்புதல் படிவம்

Investigator: மருகபிரியா தீபா லட்சுமி.

Guide: மரும.பா.அஸ்வத் நாராயண் B.Sc,MDS.

**ஆராய்ச்சி தலைப்பு**

நிரந்தர முன் பற்களின் முறிவுளும் அதனால், வாய் நலம் சார்ந்த வாழ்க்கை தரத்தில் ஏற்படும் தாக்கத்தை பற்றி சென்னையில் உள்ள 8-15 வயதுடைய பள்ளி மாணவர்களிக்கிடையே ஒரு குறுக்குப்பிரிவு ஆய்வு.

பெயர்: திரு/திருமதி ..... புற நோயாளியின் எண் -----  
முகவரி: ..... பாலினம்: ஆண்/ பெண்  
..... வயது : ஆண்டுகள்

நான் ...../ என்னுடைய சுயநினைவுடனும் மற்றும் முழுசுதந்திரத்துடனும் என் குழந்தையை இம்மருத்துவ ஆராய்ச்சியில் சேர்த்துக் கொள்ள ஒப்புதல் அளிக்கிறேன்.

1. இந்த ஆராய்ச்சியின் நோக்கம் மருத்துவமுறைகள் மற்றும் பரிசோதனை முறைகள் குறித்த விளக்கங்கள் அனைத்தும் எனக்கு திருப்திதரும் வகையில் அளிக்கப்பட்டன.
2. இந்த ஆராய்ச்சியில் என் குழந்தையின் வாய் முழு பரிசோதனை செய்யப்படும் என்பதை அறிகிறேன்.
3. இந்த ஆராய்ச்சிக்கு தேவையான முழுமையான பரிசோதனைக்கு ஒத்துழைக்க சம்மதிக்கிறேன்.
4. என் குழந்தை உட்கொள்ளும் மருந்துகளைப் பற்றிய விவரங்களை ஆராய்ச்சியாளரிடம் தெரிவித்துள்ளேன்.
5. எந்த ஒரு நிலையிலும் என் குழந்தை இந்த ஆராய்ச்சியிலிருந்து விலகுவதற்கும் அல்லது மருத்துவ ஆராய்ச்சியாளருக்கு என் குழந்தையை விலக்குவதற்கும் முழு உரிமை இருப்பதாகவும் அறிகிறேன்.
6. என் குழந்தையின் மருத்துவக் குறிப்பீடுகளை இந்த ஆராய்ச்சியில் பயன்படுத்திக்கொள்ள சம்மதிக்கிறேன். இந்த ஆராய்ச்சி மையமும் ஆராய்ச்சியாளரும் என்னுடைய குழந்தையின் விவரங்கள் அனைத்தையும் இரகசியமாக வைப்பதாக அறிகிறேன்.
7. எனக்கு படிக்க தெரியாததால், மேலே உள்ள அனைத்தையும் கூறக்கேட்டேன்.

பெயர் :

கையொப்பம் / கைரேகை  
பங்கேற்பாளர்/ பெற்றோர்/ பாதுகாவலர்

தேதி :

மருகபிரியா தீபா லட்சுமி.

ஆராய்ச்சியாளர்

தேதி :

**TAMILNADU GOVERNMENT DENTAL COLLEGE AND HOSPITAL  
CHENNAI -3  
DEPARTMENT OF PUBLIC HEALTH DENTISTRY**

**Investigator:** Dr. K.Priya Deepa Lakshmi **Guide:** Dr. M.B. Aswath Narayanan, B.sc, MDS

**INFORMED CONSENT FORM**

**STUDY TITLE:**

**PERMANENT ANTERIOR TEETH FRACTURES AND ITS IMPACT ON  
ORAL HEALTH RELATED QUALITY OF LIFE AMONG 8-15 YEARS OLD  
SCHOOL CHILDREN OF CHENNAI CITY - A CROSS-SECTIONAL  
SURVEY**

Name: Mr/Ms \_\_\_\_\_

Address: \_\_\_\_\_

SEX : Male /Female

AGE : \_\_\_\_\_ Years

\_\_\_\_\_  
\_\_\_\_\_

I, \_\_\_\_\_, exercising my free power of choice, hereby give my consent to be included as my son or daughter as a participant in the study.

I agree to the following:

1. I have been informed to my satisfaction about the purpose of the study and study procedures. I co-operate fully for complete examination.
2. I have understood my child will undergo complete oral examination for the survey.
3. Permit the cooperation of my child and his/her complete examination of the oral cavity to be used for the survey
4. I have informed about the medical issues and the drugs in taken by my child.
5. I am told that the investigating doctor and the institution will keep my identity confidential.
6. I understand that I have rights to withdraw from the study and also that the investigator has the right to exclude me from the research at any point of time.
7. Since I am unable to read, I heard the above consent form being read to me.

Name of Participants:

Investigator :

Date:

Signature/ Thumb impression of  
Parent/Guardian

**PERMANENT ANTERIOR TEETH FRACTURES AND ITS IMPACT ON  
ORAL HEALTH RELATED QUALITY OF LIFE AMONG 8-15 YEARS OLD  
SCHOOL CHILDREN OF CHENNAI CITY-A CROSS-SECTIONAL SURVEY  
CASE RECORD FORM**

S: no:

Date:

**DEMOGRAPHIC DATA**

1. Students Name : Mr. /Ms.
2. Age : Years (As on Last Birthday)
3. Sex : Male / Female
4. Date of Birth :
5. Place of Birth :
6. Religion : Hindu / Muslim /Christian /Jainism /Buddhism /Sikkism/Others
7. Class and Section :
8. Father/Guardians Occupation:
9. Income : Rs (Total members of the family: )
10. Per Capita Income:  $\frac{\text{Total income of the family}}{\text{No of Family members}}$
11. Socio economic status : Modified Kuppuswamy's Socio-Economic Status Scale  
(Updated income parameter April 2016)<sup>30</sup>

S.N	(A) EDUCATION	SCORE
1	Profession or Honours	7
2	Graduate or Postgraduate	6
3	Intermediate or Post high school diploma	5
4	High school certificate	4
5	Middle school certificate	3
6	Primary school certificate	2
7	Illiterate	1
S.N	(B) OCCUPATION	SCORE
1	Profession	10
2	Semi-profession	6
3	Clerical, Shop owner, Farmer	5
4	Skilled worker	4
5	Semi-skilled worker	3
6	Un skilled worker	2
7	Unemployed	1
S.N	LATEST REVISION IN Rs/MONTH (CPI -271 )	SCORE
1	≥ 41,796	12
2	20,898 – 41,795	10
3	15,674 – 20,897	6
4	10,449 – 15,673	4
5	6269 – 10448	3
6	2111 – 6268	2
7	≤ 2110	1
8	PER CAPITA INCOME	
	<b>TOTAL</b>	

1) 26-29 ----Upper class (I)

2) 16-25----Upper-middle class (II)

3) 11-15-----Lower-middle class (III)

4) 5-10----- Upper-Lower class (IV)

5) &lt;5 ---- Lower class (V)

13. Address & Phone Number:

14. Medical history:

15. Have you ever met with a fall or hit injury that caused breakage or loss of tooth/teeth?

a. Yes

b. No

15. a. If yes, which tooth/teeth were affected by the accident?

a. Upper front

b. Upper right back

c. Upper left back

d. Lower front

e. Lower right back

f. Lower left back

15. b How many days /month/years back the incident occurred?

15. c Did you undergo any treatment for bringing the tooth to normal?

a. Yes

b. No

If yes, specify.....

16. How did the accident happen?

a. Fall from stairs

b. Fall from window

c. Fall from tree

d. Fall from bicycling

e. Traffic accident

f. Collision against object

g. Fights

h. Others (specify).....

17. What cause the accident to damage your tooth/teeth?

a. Pushing

b. Slipping

18. Where did the accident happen?

a. Home

b. School

c. Street

d. Field/Playground

e. Park

f. Others (specify)

**19. Oral Examination:**

**WHO Oral health assessment form (1997)**

<p style="text-align: center;"><b>EXTRA-ORAL EXAMINATION</b></p> <p>0 = Normal extra-oral appearance</p> <p>1 = Ulceration, sores, erosions, fissures (head, neck, limbs)</p> <p>2 = Ulceration, sores, erosions, fissures (nose, cheeks, chin)</p> <p>3 = Ulceration, sores, erosions, fissures (commissures) <input style="width: 30px; height: 15px;" type="text"/> (32)</p> <p>4 = Ulceration, sores, erosions, fissures (vermillion border)</p> <p>5 = Cancrum oris</p> <p>6 = Abnormalities of upper and lower lips</p> <p>7 = Enlarged lymph nodes (head, neck)</p> <p>8 = Other swellings of face and jaws</p> <p>9 = Not recorded</p>	<p style="text-align: center;"><b>TEMPROMANDIBULAR JOINT ASSESSMENT SYMPTOMS</b></p> <p>0= No</p> <p>1= Yes <span style="float: right;">(33)</span> <input style="width: 40px; height: 15px;" type="text"/></p> <p>9= Not recorded</p> <p><b>SIGNS</b></p> <p>0= No</p> <p>1= Yes</p> <p>9= Not recorded</p> <p>a. Clicking <span style="float: right;">(34)</span> <input style="width: 40px; height: 15px;" type="text"/></p> <p>b. Tenderness (on palpation) (35) <input style="width: 40px; height: 15px;" type="text"/></p> <p>c. Reduced Jaw mobility (&lt;30mm opening) <span style="float: right;">(36)</span> <input style="width: 40px; height: 15px;" type="text"/></p>
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<p style="text-align: center;"><b>ORAL MUCOSA CONDITION</b></p> <p>0 = No abnormal condition</p> <p>1 = Malignant tumour (oral cancer)</p> <p>2 = Leukoplakia</p> <p>3 = Lichen planus</p> <p>4 = Ulceration (aphthous, herpetic, traumatic)</p> <p>5 = Acute necrotizing gingivitis</p> <p>6 = Candidiasis</p> <p>7 = Abscess</p> <p>8 = Other condition (specify)---</p> <p>9 = Not recorded</p>	<p style="text-align: center;"><b>LOCATION</b></p> <p>0 = Vermillion border</p> <p>1 = Commissures</p> <p>2 = Lips</p> <p>3= Sulci</p> <p>4 = Buccal mucosa</p> <p>5 = Floor of mouth</p> <p>6 = Tongue</p> <p>7 = Hard and/or soft palate</p> <p>8 = Alveolar ridges/gingiva</p> <p>9 = Not recorded</p> <table border="1" style="float: right; margin-top: 20px; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">37</td> <td style="width: 20px;"></td> <td style="width: 20px; text-align: center;">40</td> <td style="width: 20px;"></td> </tr> <tr> <td style="text-align: center;">38</td> <td></td> <td style="text-align: center;">41</td> <td></td> </tr> <tr> <td style="text-align: center;">39</td> <td></td> <td style="text-align: center;">42</td> <td></td> </tr> </table>	37		40		38		41		39		42	
37		40											
38		41											
39		42											

**ENAMEL OPACITIES/ HYPOPLASIA**

- 0 = Normal
- 1 = Demarcated opacity
- 2 = Diffuse opacity
- 3 = Hypoplasia
- 4 = Other Defects
- 5 = Demarcated and Diffuse opacities
- 6 = Demarcated opacities and hypoplasia
- 7 = Diffuse opacity and hypoplasia
- 8 = All three conditions
- 9 = Not recorded

14	13	12	11	21	22	23	24
46							36

**DENTAL FLUOROSIS**

- 0 = Normal
- 1 = Questionable
- 2 = Very mild
- 3 = Mild
- 4 = Moderate
- 5 = Severe
- 8 = Excluded
- 9 = Not recorded

(53)

**COMMUNITY PERIODONTAL INDEX (CPI)**

17/16    11    26/27

- 0 = Healthy
- 1 = Bleeding
- 2 = Calculus
- 3\* = Pocket 4-5mm (black band on probe partially visible)
- 4\* = Pocket 6mm or more (black band on probe not visible)
- X = Excluded sextants
- 9 = Not recorded


47/46    31    36/37

**DENTITION STATUS**

				55	54	53	52	51	61	62	63	64	65			
	18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
Crown																
Root																
Treatment																

				85	84	83	82	81	71	72	73	74	75			
	48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
Crown																
Root																
Treatment																

Primary	Permanent		Status	Treatment needs
	Crown	Root		
A	0	0	Sound	0 = None
B	1	1	Decayed	P= Preventive, caries-arresting care
C	2	2	Filled and decayed	F = Fissure sealant
D	3	3	Filled, no decay	1 = One surface filling
E	4	-	Missing as a result of caries	2 = Two or more surface fillings
-	5	-	Missing, any other reason	3 = Crown for any reason
F	6	-	Fissure sealant	4 = Veneer or laminate
G	7	7	Bridge adudment, special crown, or veneer/implants	5 = Pulp care and restoration
-	8	8	Unerupted tooth,(crown)/ unexposed root	6 = Extraction
T	T	-	Trauma(fracture)	7, 8 = Need for other care, specify
9	9	9	Not recorded	Not recorded



**DENTURE WEARING**

- 0 = No prosthesis
- 1 = Bridge Upper  162
- 2 = More than one bridge
- 3 = Partial Denture Lower  163
- 4 = Both bridge and partial denture
- 5 = Full removable denture
- 9 = Not recorded

**PROSTHETIC NEEDS**

- 0 = No prosthesis needed
- 1 = Need for one-unit prosthesis Upper  164
- 2 = Need for multi-unit prosthesis
- 3 = Need for a combination of one/multi-unit prosthesis Lower  165
- 4 = Need for full prosthesis (replacement of all teeth)
- 9 = Not recorded

**DENTOFACIAL ANOMALIES**

Number of missing incisor, canine, premolar teeth in maxillary and mandibular arches

166  167

- Crowding in the incisal segment  168
- Spacing in the incisal segment  169

- 0 = No crowding
- 1 = One segment crowded
- 2 = Two segment crowded

- 0 = No spacing
- 1 = One segment spaced
- 2 = Two segment spaced

- Diastema in mm [  mm] 170
- Largest anterior maxillary irregularity [  mm] 171
- Largest anterior mandibular irregularity [  mm] 172
- Anterior maxillary overjet [  mm] 173
- Anterior mandibular overjet [  mm] 174
- Vertical anterior openbite [  mm] 175

Anterio-posterior molar relation  176  
 (0 = normal, 1 = half cusp, 2 = Full cusp)

**NEED FOR IMMEDIATE CARE AND REFERRAL**

- Life-threatening condition  (177)
- Pain or infection  (178)
- Other condition (Specify)  (179)
- Referral
- 0- No
- 1-Yes  (180)
- 2- Not recorded

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**20. TYPE OF TOOTH FRACTURES:**

**[Ellis and Davey's classification (1970)]<sup>28</sup>**

<b>CLASS</b>	<b>DESCRIPTION</b>	<b>P/A</b>
Class I	Simple fracture of the crown involving little (or) no dentin.	
Class II	Extensive fracture of the crown involving considerable dentin, but not the dental pulp.	
Class III	Extensive fracture of the crown involving considerable dentin and exposing the dental pulp.	
Class IV	The traumatized teeth that become nonvital with (or) without loss of crown structure.	
Class V	Teeth lost as a result of trauma	
Class VII	Displacement of a tooth without fracture of crown (or) root.	
Class VIII	Fracture of crown en masse and its replacement.	

**21. Child Oral Health Impact Profile [Hillary L. Border and Wilson-Genderson 2007]<sup>11</sup>**

<b>A. ORAL HEALTH - WELL BEING (6 items)</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>Score</b>
1.Had pain in your teeth/toothache due to trauma in the tooth						
2.Had discoloured teeth in your mouth due to trauma in the tooth						
3.Had pain or sensitivity in teeth with hot or cold things due to trauma in the tooth						
4.Had sores or sore spots in or around your mouth due to trauma in the tooth						
5.Had bad breath due to trauma in the tooth						
6.Had bleeding gums due to trauma in the tooth						
<b>B. FUNCTIONAL WELL-BEING (6 items)</b>						
1. Had trouble biting off or chewing foods such as apple, carrot, or firm meat due to trauma in the tooth						
2.Had difficulty eating foods you would like to eat due to trauma in the tooth						
3.Had trouble sleeping due to trauma in the tooth						
4.Had difficulty saying certain words due to trauma in the tooth						
5.Had people have difficulty understanding what you were saying due to trauma in the tooth						
6.Had difficulty keeping your teeth clean due to trauma in the tooth						
<b>C. SOCIAL/EMOTIONAL WELL-BEING (8 items)</b>						
1.Been unhappy or sad due to trauma in the tooth						
2.Felt worried or anxious due to trauma in the tooth						
3.Avoided smiling or laughing with other children due to trauma in the tooth						
4.Felt that you look different due to trauma in the tooth						
5.Been worried about what other people think about the teeth						
6.Felt shy or withdrawn due to trauma in the tooth						
7.Been teased, bullied, or called names by other children due to trauma in the tooth						
8.Been upset or uncomfortable with being asked questions about the teeth						
<b>D. SCHOOL ENVIRONMENT (4 items)</b>						
1.Missed school due to trauma in the tooth						
2.Had difficulty paying attention in school due to trauma in the tooth						
3.Not wanted to speak/read out loud in class due to trauma in the tooth						
4.Not wanted to go to school due to trauma in the tooth						
<b>E. SELF-IMAGE (6 items)</b>						
1. Been confident?						
2. Felt that you were attractive (good looking)?						
3.I have good teeth						
4.I feel good about myself						
5.When I am older, I believe (think) that I will have good teeth						
6.When I am older, I believe (think) that I will have good health						

**Response format:** 0=Never, 1=Almost never, 2=Sometimes, 3= Fairly often, 4=Almost all of the time

**PHOTOGRAPH 1**

**INTRAORAL PHOTOGRAPHS OF STUDY PARTICIPANTS-  
ELLIS AND DAVEYS CLASSIFICATION (1970)**

*1.1 Ellis class I fracture*



*1.4 Ellis class V fracture*



*1.2 Ellis class II fracture*



*1.5 Ellis class VII fracture*



*1.3 Ellis class IV fracture*



*1.6 Ellis class VIII fracture*



## **RESULTS**

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## RESULTS

A total of 7247 school going children aged 8 to 15 years from the 30 randomly selected schools were screened for prevalence of permanent anterior teeth fractures. Among those screened 62.5% were boys (n=4527) and 37.5% were girls (n=2720). Six hundred and twenty eight (n=628) children with permanent anterior teeth fracture constituted the study participants.

### **Descriptive characteristics of the study participants**

The prevalence of permanent anterior teeth fractures was found to be 8.7% among which boys were 3.5 times more likely to experience anterior teeth fractures than girls. The mean age was  $12.32 \pm 1.8$  years with predominant age being 14 years (21.2%). The major Indian religion (Hinduism) prevailed more (78.7%) when compared to other ethnic groups. The socioeconomic status scale for urban areas (Modified Kuppaswamy's Socio-economic scale<sup>30</sup>) identified majority of individuals (78.7%) from upper lower class. The prevalence of tooth fractures was comparatively higher among the Corporation school with 41.2% of children affected (Table 1).

### **Assessment of factors associated with permanent anterior teeth fracture**

The cause of injury and other influencing factors for permanent anterior teeth fracture were assessed through the questionnaire and compared between schools. On assessment of self-awareness of the history of occurrence of anterior tooth fracture 0.5% were not even aware of the presence of tooth fracture or any history of correlated fracture. Majority of tooth fracture had occurred due to tripping or slipping (62.4%). On investigating the specific reason for occurrence of tooth fracture,

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collision against object was the most frequent cause followed by fall from stairs or from bicycle. Forty two percent of the fracture had occurred at home whereas other places of occurrence of trauma included school, street, park or play-ground. There was no significant difference between schools when considering the awareness of occurrence of fracture, cause of fracture, specific reason or the place of fracture. An average of  $3.2 \pm 1.6$  years had passed at the time of screening since occurrence of the tooth fracture. Only 2.2% had underwent treatment for anterior teeth fracture with significantly high ( $p=0.008$ ) number of treated individuals reporting from private schools (Table 2).

#### ***Examination of permanent anterior teeth fracture***

A total of 784 teeth were fractured among 628 school children. Among the permanent anterior teeth, maxillary left central incisor (47.2%) was the most probable tooth involved with trauma. Ellis Class I, II, IV, V, VII and VIII fractures were reported and enamel fracture (86.4%) was the predominant among them all (Table 3). There were no Class III tooth fractures reported among the study population. There was no significant difference among the class of fracture in respect to type of tooth or the type of school (Table 4, 5). Single tooth fractures were more (78.7%) common than multiple tooth fractures.

#### ***WHO assessment form (Table 6, 7)***

WHO oral health assessment form 1997 was used to assess the oral health status of the individuals with permanent anterior teeth fracture. There was no oral mucosal conditions reported among the study participants. On oral examination 4.3% had enamel opacity, 5.4% had dental fluorosis 99.8% had gingival bleeding, 0.3 had fixed prosthesis, 1.8% had any prosthetic need, and 47.5% had crowding of

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teeth, 18.2% had spacing of teeth, 1.3% had abnormal molar relation. None of the individuals had need for immediate care or referral. The mean DMFT was  $1.44 \pm 2.01$  with significantly higher scores among the corporation schools. On assessment of malocclusion through components of Dental Aesthetic Index revealed a significant influence of diastema (mean=0.53mm) and anterior maxillary overjet (mean=4.2mm) with tooth fractures ( $p < 0.001$ ).

**Impact of permanent anterior teeth fracture on OHRQoL**

Assessment of OHRQoL was assessed by assessment of various components of COHIP such as oral health wellbeing, functional wellbeing social-emotional wellbeing, school environment and self-image. For categorizing the scores of the impact of permanent anterior teeth fracture on OHRQoL as higher and lower, the proportions of study population above the median were considered to have lower impact implying positive OHRQoL and the proportion below median as higher impact implying negative OHRQoL.

The mean score of COHIP for assessment of impact of permanent anterior teeth fractures on OHRQoL is 85.82 with median of 96. Considering the above categorization, 45.7% of those with anterior teeth fracture had positive OHRQoL and 54.3% had negative OHRQoL. All the study participants (100%) had negative functional wellbeing, social-emotional wellbeing and school environment. 53.2% of individuals had negative oral health well-being and 52.1% had negative self-image (Table 8, Diagram 1).

The influence of age, gender, socioeconomic status, religion, type of school, type of teeth involved, cause of fracture, malocclusion and dental fluorosis on



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the impact of OHRQoL among the anterior teeth fracture was analysed using Chi square test. Age showed a significant ( $p=0.031$ ) influence on the impact of anterior teeth fracture on OHRQoL with higher negative OHRQoL reported among 13 years of age (63%) followed by 14 years (60.9%). Socioeconomic status showed a significant ( $p=0.011$ ) influence on the impact of anterior tooth fracture on OHRQoL with negative OHRQoL among the lower class (64.6%) and upper lower class (56.1%). Religion also showed a significant ( $p=0.047$ ) influence on the impact of anterior tooth fracture on OHRQoL with the negative OHRQoL among the Christians (70.4%). Other factors such as gender, category of teeth, specific reason for fracture, cause of fracture, dental fluorosis, crowding, spacing, anterior-posterior molar relation did not significantly influence the impact of anterior teeth fracture in permanent teeth on OHRQoL. (Table 9)

The type of school had highly significant ( $p<0.001$ ) influence on the impact of anterior teeth fracture in permanent tooth on OHRQoL with negative OHRQoL among the corporation schools. In general study participants of corporation schools had negative OHRQoL with significant difference in oral health well-being ( $p<0.001$ ) and self-image ( $p=0.014$ ). Functional well-being, Socio-emotional well-being and school environment showed no significant difference between the schools.

**Table 1: Descriptive characteristics of the study participants**

<b>DEMOGRAPHIC DATA</b>		<b>STUDY PARTICIPANTS n (%)</b>
<b>GENDER</b>	Boys	490(78)
	Girls	138(22)
	Total	628(100)
<b>AGE (YEARS)</b> Mean±SD 12.32±1.8	8 years	17(2.7)
	9 years	33(5.3)
	10 years	68(10.8)
	11 years	94(15)
	12 years	93(14.8)
	13 years	119(18.9)
	14 years	133(21.2)
	15 years	71(11.3)
<b>RELIGION</b>	Hindu	494(78.7)
	Muslim	107(17)
	Christian	27(4.3)
<b>SOCIO ECONOMIC STATUS</b> <b>Modified Kuppaswamy's Socio-economic Status Scale</b> <b>(Updated income parameter April 2016)</b>	Upper	1(0.2)
	Upper Middle	15(2.4)
	Lower Middle	70(11.1)
	Upper Lower	494(78.7)
	Lower	48(7.6)
<b>School</b>	Corporation	259(41.2)
	Corporation aided	229(36.5)
	Private	140(22.3)

**Table 2: Assessment of factors associated with permanent anterior teeth fractures**

Factors associated with anterior tooth fracture	Options	Total	Corp.	Govt. aided	Private	Chi-Square Test	p-value
		n (%)	n (%)	n (%)	n (%)		
1. Awareness of occurrence	Yes	625(99.5)	259(100)	226(98.7)	140(100)	3.602	0.059
	No	3(0.5)	0(0)	3(1.3)	0(0)		
2. Causes of fracture	Pushing	236(37.6)	106(40.9)	84(36.7)	46(32.9)	10.488	00.033
	Slipping	392(62.4)	153(59.1)	145(63.3)	94(67.2)		
3. Specific reason of fracture	Fall from stairs	102(16.2)	52(20.1)	31(13.5)	19(13.6)	13.531	0.485
	Fall from window	10(1.6)	6(2.3)	3(1.3)	1(0.7)		
	Fall from tree	23(3.7)	9(3.5)	8(3.5)	6(4.3)		
	Fall from bicycling	67(10.7)	24(9.3)	28(12.2)	15(10.7)		
	Traffic accident	26(4.1)	10(3.9)	10(4.4)	6(4.3)		
	Collision against object	346(55.1)	131(50.6)	135(59)	80(57.1)		
	Fights	44(7)	22(8.5)	10(4.4)	12(8.6)		
	Others	10(1.6)	5(1.9)	4(1.7)	1(0.7)		
4. Place of fracture	Home	264(42)	115(44.4)	84(36.7)	65(46.4)	3.405	0.202
	School	183(29.1)	73(28.2)	75(32.8)	35(25)		
	Street	95(15.1)	31(12)	41(17.9)	23(16.4)		
	Field/Playground	13(2.1)	7(2.7)	4(1.7)	2(1.4)		
	Park	24(3.8)	15(5.8)	6(2.6)	3(2.1)		
	Others	49(7.8)	18(6.9)	19(8.3)	12(8.6)		
5. Time elapsed since teeth fracture (years)	Mean $\pm$ SD	3.15 $\pm$ 1.58	3.12 $\pm$ 1.60	3.20 $\pm$ 1.55	3.14 $\pm$ 1.59	0.173	0.841
5. Underwent treatment	Yes	14(2.2)	2(0.8)	4(1.7)	8(5.7)	8.859	0.008
	No	614(97.8)	257(99.2)	225(98.3)	132(94.3)		

**Table 3: Examination of permanent anterior teeth fractures**

Anterior teeth fractures		Total	Corp.	Govt. aided	Private	Chi square Test	p-value
		n (%)	n (%)	n (%)	n (%)	9.674	0.079
Category of teeth n=628	Upper front	594(94.6)	240(92.7)	217(94.8)	137(97.9)	2.727	0.066
	Upper right back	3(0.5)	0(0)	3(1.3)	0(0)		
	Lower front	25(4)	14(5.4)	8(3.5)	3(2.1)		
	Upper and Lower front	6(1)	5(1.9)	1(0.4)	0(0)		
Tooth Number FDI n=784	11	318(40.6)	124(37.1)	127(44.3)	67(41.1)	20.025	0.008
	12	26(3.3)	11(3.3)	10(3.5)	6(3.1)		
	13	1(0.1)	1(0.3)	0(0)	0(0)		
	21	370(47.2)	157(47)	126(43.9)	87(53.4)		
	22	35(4.5)	21(6.3)	13(4.5)	1(0.6)		
	23	1(0.1)	1(0.3)	0(0)	0(0)		
	31	8(1.0)	4(1.2)	3(1)	1(0.6)		
	32	7(0.9)	3(0.9)	3(1)	1(0.6)		
	33	0(0)	0(0)	0(0)	0(0)		
	41	12(1.5)	7(2.1)	4(1.4)	1(0.3)		
	42	6(0.8)	5(1.5)	1(0.3)	0(0)		
	43	0(0)	0(0)	0(0)	0(0)		
Ellis classification of fracture (1960) n=784	Class -I	677(86.4)	274(82)	255(88.9)	148(90.8)	20.025	0.008
	Class -II	66(8.4)	43(12.9)	17(5.9)	6(3.7)		
	Class -IV	31(4)	13(3.9)	10(3.5)	8(4.9)		
	Class -V	7(0.9)	3(0.9)	3(1)	1(0.6)		
	Class -VII	1(0.1)	1(0.3)	0(0)	0(0)		
	Class -VIII	2(0.3)	0(0)	2(0.7)	0(0)		

**Table 4: Type of anterior tooth fracture in respect to type of teeth**

Type of teeth	Type of anterior tooth fractures						Chi-Square (Fisher's Exact Test)	p-value
	Class I	Class II	Class IV	Class V	Class VII	Class VIII		
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)		
11	281(88.4)	24(7.5)	9(2.8)	3(0.9)	0(0)	1(0.3)	21.094	0.999
12	23(88.5)	0(0)	2(7.7)	1(3.8)	0(0)	0(0)		
13	1(100)	0(0)	0(0)	0(0)	0(0)	0(0)		
21	314(84.9)	35(9.5)	17(4.6)	2(0.5)	1(0.3)	1(0.3)		
22	30(85.7)	3(8.6)	1(2.9)	1(2.9)	0(0)	0(0)		
23	1(100)	0(0)	0(0)	0(0)	0(0)	0(0)		
31	8(100)	0(0)	0(0)	0(0)	0(0)	0(0)		
32	6(85.7)	1(14.3)	0(0)	0(0)	0(0)	0(0)		
41	8(66.7)	2(16.7)	2(16.7)	0(0)	0(0)	0(0)		
42	5(83.3)	1(16.7)	0(0)	0(0)	0(0)	0(0)		
Total	677(86.4)	66(8.4)	31(4)	7(0.9)	1(0.1)	2(0.3)		

**Table 5: Type of anterior teeth fractures in respect to type of school**

Type of school	Type of teeth	Type of Anterior teeth fractures						Chi-Square (Fisher's Exact Test)	p-Value
		Class I	Class II	Class IV	Class V	Class VII	Class VIII		
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)		
Corporation	11	100(80.6)	18(14.5)	4(3.2)	2(1.6)	0(0)	0(0)	49.582	0.896
	12	9(81.8)	0(0)	21(8.2)	0(0)	0(0)	0(0)		
	13	1(100)	0(0)	0(0)	0(0)	0(0)	0(0)		
	21	127(80.9)	21(13.4)	7(4.5)	1(0.6)	1(0.6)	0(0)		
	22	19(90.5)	2(9.5)	0(0)	0(0)	0(0)	0(0)		
	23	1(100)	0(0)	0(0)	0(0)	0(0)	0(0)		
	31	4(100)	0(0)	0(0)	0(0)	0(0)	0(0)		
	32	3(100)	0(0)	0(0)	0(0)	0(0)	0(0)		
	41	5(71.4)	2(28.6)	0(0)	0(0)	0(0)	0(0)		
	42	5(100)	0(0)	0(0)	0(0)	0(0)	0(0)		
	Total	274(82)	43(12.9)	13(3.9)	3(0.9)	1(0.3)	0(0)		
Govt. Aided	11	117(92.1)	6(4.7)	2(1.6)	1(0.8)	0(0)	1(0.8)	51.021	0.041
	12	10(100)	0(0)	0(0)	0(0)	0(0)	0(0)		
	13	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
	21	111(88.1)	8(6.3)	5(4)	1(0.8)	0(0)	1(0.8)		
	22	10(76.9)	1(7.7)	1(7.7)	1(7.7)	0(0)	0(0)		
	23	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
	31	3(100)	0(0)	0(0)	0(0)	0(0)	0(0)		
	32	2(66.7)	1(33.3)	0(0)	0(0)	0(0)	0(0)		
	41	2(50)	0(0)	2(50)	0(0)	0(0)	0(0)		
	42	0(0)	1(100)	0(0)	0(0)	0(0)	0(0)		
	Total	255(88.9)	17(5.9)	10(3.5)	3(1)	0(0)	2(0.7)		
Private	11	64(95.5)	0(0)	3(4.5)	0(0)	0(0)	0(0)	38.545	0.140
	12	4(80)	0(0)	0(0)	1(20)	0(0)	0(0)		
	13	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
	21	76(87.4)	6(6.9)	5(5.7)	0(0)	0(0)	0(0)		
	22	1(100)	0(0)	0(0)	0(0)	0(0)	0(0)		
	23	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
	31	1(100)	0(0)	0(0)	0(0)	0(0)	0(0)		
	32	1(100)	0(0)	0(0)	0(0)	0(0)	0(0)		
	41	1(100)	0(0)	0(0)	0(0)	0(0)	0(0)		
	42	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
	Total	148(90.8)	6(3.7)	8(4.9)	1(0.6)	0(0)	0(0)		

**Table 6: Oral diseases and conditions reported among study participants****(Qualitative data)**

Oral diseases and conditions		Total	Corp.	Govt. aided	Private	Chi square	p-Value
		n(%)	n (%)	n (%)	n (%)		
1.Oral mucosal lesions	Normal	628(100)	259(100)	229(100)	140(100)	-	-
2.Enamel opacities	Normal	601(95.7)	240(92.7)	223(97.4)	138(98.6)	9.383	0.022 <sup>x</sup>
	Demarcated opacity	25(4)	17(6.6)	6(2.6)	2(1.4)		
	Diffuse opacity	2(0.3)	2(0.8)	0(0)	0(0)		
3.Dental fluorosis	Normal	594(94.6)	236(91.1)	223(97.4)	135(96.4)	10.660	0.137 <sup>x</sup>
	Questionable	20(3.2)	14(5.4)	3(1.3)	3(2.1)		
	Very mild	6(1)	3(1.2)	2(0.9)	1(0.7)		
	Mild	6(1)	4(1.5)	1(0.4)	1(0.7)		
	Moderate	2(0.3)	2(0.8)	0(0)	0(0)		
4. CPI	Healthy	1(0.2)	0(0)	1(0.4)	0(0)	1.740	0.588 <sup>x</sup>
	Bleeding	627(99.8)	259(100)	228(99.6)	140(100)		
5.DMFT	Mean±SD	1.44±2.01	1.88±2.2	1.45±2.06	0.61±1.13		<0.001 <sup>#</sup>
6.Denture wearing	Normal	626(99.7)	259(100)	227(99.1)	140(100)	3.487	0.529 <sup>x</sup>
	More than one bridge	1(0.2)	0(0)	1(0.4)	0(0)		
	Partial denture	1(0.2)	0(0)	1(0.4)	0(0)		
7.Prosthetic needs	No	617(98.2)	254(98.1)	224(97.8)	139(99.3)	2.528	0.756 <sup>x</sup>
	One unit	10(1.6)	5(1.9)	4(1.7)	1(0.7)		
	Combination	1(0.2)	0(0)	1(0.4)	0(0)		
8.Crowding	No crowding	330(52.5)	117(45.2)	132(57.6)	81(57.9)	14.989	0.005 <sup>x</sup>
	1 segment crowded	156(24.8)	66(25.5)	52(22.7)	38(27.1)		
	2 segment crowded	142(22.6)	76(29.3)	45(19.7)	21(15)		
9.Spacing	No spacing	514(81.8)	172(66.4)	212(92.6)	130(92.9)	69.161	<0.001 <sup>x</sup>
	1 segment spaced	93(14.8)	70(27)	14(6.1)	9(6.4)		
	2 segment spaced	21(3.3)	17(6.6)	3(1.3)	1(0.7)		
10.Anterio-posterior molar relation	Normal	620(98.7)	251(96.9)	229(100)	140(100)	9.887	0.002 <sup>x</sup>
	Half cusp	8(1.3)	8(3.1)	0(0)	0(0)		

<sup>x</sup>-Chisquare test <sup>#</sup>-Kruakal Wallis

**Table 7: Oral diseases and conditions reported among study participants****(Quantitative data)**

Variables	Type of school	n	Mean	Chi-Square Value	p-Value
1.Missing	Corporation	259	0.035±0.23	1.870	0.393
	Govt aided	229	0.31±0.19		
	Private	140	0.14±0.16		
2.Diastema (mm)	Corporation	259	0.822±1.09	27.922	<0.001
	Govt aided	229	0.415±0.87		
	Private	140	0.4±0.85		
3. Largest anterior maxillary irregularity (mm)	Corporation	259	1.58±1.30	10.335	0.006
	Govt aided	229	1.45±1.32		
	Private	140	1.2±1.51		
4. Largest anterior mandibular irregularity (mm)	Corporation	259	1.67±1.56	4.407	0.110
	Govt aided	229	1.56±1.43		
	Private	140	1.44±1.81		
5. Anterior maxillary overjet (mm)	Corporation	259	3.876±1.87	16.657	<0.001
	Govt aided	229	4.21±2.00		
	Private	140	4.47±1.62		
6. Anterior mandibular overjet (mm)	Corporation	259	0.01±0.24	1.454	0.483
	Govt aided	229	0±0		
	Private	140	0.02±0.25		
7. Verticle anterior open bite (mm)	Corporation	259	0.03±0.36	1.173	0.556
	Govt aided	229	0.03±0.38		
	Private	140	0±0		



**Table 8: Impact of OHRQoL among study participants**

Variables	Minimum (0)	Maximum (120)	Median	Positive n (%)	Negative n (%)
	n=628				
A.Oral Health Wellbeing	16	24	21	294(46.8)	334(53.2)
B.Functional Wellbeing	0	24	24	0(0)	628(100)
C.Social-Emotional Wellbeing	0	32	32	0(0)	628(100)
D.School Environment	4	16	16	0(0)	628(100)
E.Self-Image	0	20	5	301(47.9)	327(52.1)
Total score	34	116	96	287(45.7)	341(54.3)

**Table 9: Influence of age, gender, socioeconomic status, religion, type of school, type of teeth involved, cause of fracture, malocclusion and dental fluorosis on the impact of OHRQoL among the study participants**

Anterior teeth fracture		Total score		Chi-Square Test	p-value
		Positive OHRQoL	Negative OHRQoL		
		n(%)	n(%)		
1.Age(years)	8	10(58.8)	7(41.2)	15.454	0.031 <sup>x</sup>
	9	13(39.4)	20(60.6)		
	10	40(58.8)	28(41.2)		
	11	48(51.1)	46(48.9)		
	12	49(52.7)	44(47.3)		
	13	44(37)	75(63)		
	14	52(39.1)	81(60.9)		
	15	31(43.7)	40(56.3)		
	Total	287(45.7)	341(54.3)		
2.Gender	Male	221(45.1)	269(54.9)	0.322	0.570 <sup>x</sup>
	Female	66(47.8)	72(52.2)		
	Total	287(45.7)	341(54.3)		
3.Socioeconomic status	Upper class	1(100)	0(0)	11.922	0.011 <sup>f</sup>
	Upper middle class	9(60)	6(40)		
	Lower middle class	43(61.4)	27(38.6)		
	Upper lower class	217(43.9)	277(56.1)		
	Lower class	17(35.4)	31(64.6)		
	Total	287(45.7)	341(54.3)		
4.Religion	Hindu	221(44.7)	273(55.3)	6.114	0.047 <sup>x</sup>
	Muslim	58(54.2)	49(45.8)		
	Christian	8(29.6)	19(70.4)		
	Total	287(45.7)	341(54.3)		

X =Pearson Chi-Square, f = Fischer's exact test

Anterior teeth fracture		Total score		Chi-Square Test	p-value
		Positive OHRQoL	Negative OHRQoL		
		n(%)	n(%)		
5.Category of teeth	Upper front	274(46.1)	320(53.9)	2.574	0.488 <sup>f</sup>
	Upper right back	0(0)	3(100)		
	Upper left back	0(0)	0(0)		
	Lower front	11(44)	14(56)		
	Lower right back	0(0)	0(0)		
	Lower left back	0(0)	0(0)		
	Upper& Lower front	2(33.3)	4(66.7)		
	Total	287(45.7)	341(54.3)		
6.Specific reason for fracture	Fall from stairs	58(56.9)	44(43.1)	8.522	0.286 <sup>f</sup>
	Fall from window	4(40)	6(60)		
	Fall from tree	9(39.1)	14(60.9)		
	Fall from bicycle	32(47.8)	35(52.2)		
	Traffic accident	12(46.2)	14(53.8)		
	Collision against object	153(44.2)	193(55.8)		
	Fights	16(36.4)	28(63.6)		
	Others	3(30)	7(70)		
	Total	287(45.7)	341(54.3)		
7.What cause the accident	Pushing	114(48.3)	122(51.7)	1.033	0.309 <sup>x</sup>
	Slipping	173(44.1)	219(55.9)		
	Total	287(45.7)	341(54.3)		
8.Dental fluorosis	Normal	266(44.8)	328(55.2)	7.013	0.107 <sup>f</sup>
	Questionable	13(65)	7(35)		
	Very mild	2(33.3)	4(66.7)		
	Mild	5(83.3)	1(16.7)		
	Moderate	1(50)	1(50)		
	Severe	0(0)	0(0)		
	Excluded	0(0)	0(0)		
	Not recorded	0(0)	0(0)		
	Total	287(45.7)	341(54.3)		

<sup>x</sup>=Pearson Chi-Square<sup>f</sup>=Fischer's exact test

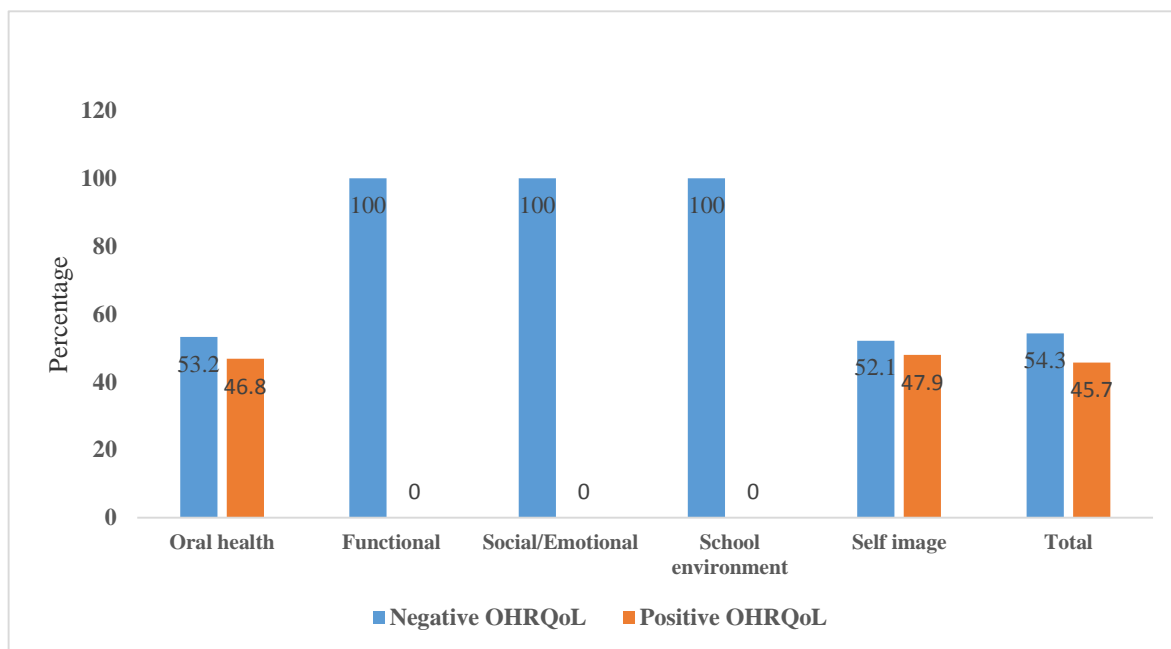
Anterior teeth fracture		Total score		Chi-Square Test	p-value
		Positive OHRQoL	Negative OHRQoL		
		n(%)	n(%)		
9.Crowding	No crowding	155(47)	175(53)	1.862	0.394 <sup>x</sup>
	One segment crowded	64(41)	92(59)		
	Two segment crowded	68(47.9)	74(52.1)		
	Total	287(45.7)	341(54.3)		
10.Spacing	No spacing	242(47.1)	272(52.9)	3.905	0.142 <sup>x</sup>
	One segment spaced	34(36.6)	59(63.4)		
	Two segment spaced	11(52.4)	10(47.6)		
	Total	287(45.7)	341(54.3)		
11.Anterior-posterior molar relation	Normal	283(45.6)	337(54.4)	-	0.999 <sup>f</sup>
	Half cusp	4(50)	4(50)		
	Full cusp	0(0)	0(0)		
	Total	287(45.7)	341(54.3)		

<sup>x</sup> = Pearson Chi-Square, <sup>f</sup> = Fischer's exact test

**Table 10: Influence of type of school on the impact of OHRQoL among the study participants**

Variables		Corp.	Govt. aided	Private	Chi-Square (Pearson Chi-Square)	p-value
		n (%)	n (%)	n (%)		
OHRQoL well-being	Positive	83(32)	116(50.7)	88(62.9)	38.33	<0.001
	Negative	176(68)	113(49.3)	52(37.1)		
Oral health well-being	Positive	82(31.7)	119(52)	93(66.4)	47.96	<0.001
	Negative	177(68.3)	110(48)	47(33.6)		
Functional well-being	Positive	0(0)	0(0)	0(0)	-	-
	Negative	259(100)	229(100)	140(100)		
Social/Emotional well-being	Positive	0(0)	0(0)	0(0)	-	-
	Negative	259(100)	229(100)	140(100)		
School Environment	Positive	0(0)	0(0)	0(0)	-	-
	Negative	259(100)	229(100)	140(100)		
Self -image	Positive	113(43.6)	106(46.3)	82(58.6)	8.519	0.014
	Negative	146(56.4)	123(53.7)	58(41.4)		

**Diagram 1: Impact of anterior teeth fractures on OHRQoL among study participants**



## **DISCUSSION**

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## **DISCUSSION**

Oral health is an integral part of general health and it is an essential constituent for conservation of the quality of life. Oral health problems such as dental caries,<sup>31</sup> periodontal disease,<sup>32,33</sup> dental fluorosis,<sup>34</sup> malocclusion<sup>2,35</sup> and cleft lip and palate<sup>36</sup> are important factors in predicting the daily performance and quality of life thereby having impact how people grow, enjoy life, speak, chew, taste food, and socialize.

Trauma to tooth affects aesthetics and alters functions causing pain, fractures at various levels of teeth, displacement, colour alteration or tooth mortality. These alteration in the aesthetics and functions of the traumatised teeth may have a considerable impact on the quality of life of the affected individuals. It has been understood that fractured anterior teeth can lead to social and psychological embarrassment, such as feeling of shame to smile,<sup>25</sup> having difficulty in social relationships, feeling incapable of maintaining a balanced emotional state, which in turn provokes state of irritation, not being able to eat certain foods and having difficulty in cleaning the teeth.<sup>11</sup>

This cross-sectional survey evaluated the impact of permanent anterior teeth fractures on OHRQoL among 8-15 year old school children by using the COHIP questionnaire. The prevalence of tooth fractures (8.7%) in the current study is similar to the previous Indian studies by Patel and Sujana (2012),<sup>37</sup> Govindarajan et al (2012),<sup>6</sup> Ritesh Kalaskar et al (2013),<sup>4</sup> with the prevalence ranging from 6-40%. Few international studies by Adekoya et al (2004),<sup>38</sup> Chen et al (2014)<sup>39</sup> also had a



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prevalence within the range of 6-40% which is in accordance with data from WHO.

The prevalence of dental trauma in these epidemiological studies have been found to fluctuate within the acceptable range and the discrepancy might be due to the influence of factors such as the classification of fracture used, type of dentition assessed, geographical, and behavioural differences between locations and countries.

Trauma to teeth with its associated symptoms affects a child's wellbeing and in the current study 54.3% had negative OHRQoL which was similar to studies by Traebert et al (2011),<sup>7</sup> Freire-Maia et al (2015)<sup>24</sup> and comparatively higher than studies by Maria B. Siqueira et al (2013)<sup>21</sup> and Viegas et al (2014).<sup>22</sup> A similar study by Bagchi et al (2016)<sup>13</sup> among the school children of Lucknow has assessed OHRQoL using CPQ11-14 short form of Jokovick et al (2006)<sup>40</sup> has reported OHRQoL and its domains (experienced oral symptoms, experienced functional limitation, emotional wellbeing, and social wellbeing) being associated with tooth fractures.

The current study uses the COHIP by Border et al (2007)<sup>10</sup> for assessment of OHRQoL among the school children. Among the instruments used in Dentistry, the Oral Health Impact Profile (OHIP) is considered a consistent tool to identify the OHRQoL dimensions and is widely used in cross-sectional and longitudinal studies.<sup>42</sup> Moreover the COHIP which is the child version of OHIP is a single questionnaire used among children of 8-15 years of age so as to obtain self-reports for the assessment of the OHRQoL. It is also pretested for this age group for its readability, construct validity, discriminant validity and convergent validity.<sup>10</sup>

The prevalence of teeth fracture and its impact on OHRQoL was higher among 13 and 14 years of age which is in line with the findings of Lam et al (2008)<sup>42</sup>

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who concluded that the majority of teeth fracture occurs in 0 to 4, 5 to 9 and 10 to 14 years age groups. Age is a determinant which influences the impact on OHRQoL and it has been proven that there is inception of abstract thinking and building of one's self-image and children start comparing their physical characteristics and personality traits with those of other children after 6 years of age. The idea of aesthetics linked to health now begins to be incorporated in the mind of the child, interfering with his/her concept of self-esteem.<sup>31</sup> The age selected for this cross-sectional survey was 8-15 years of age so as to satisfy the above cause. During this period there is the maximum physiologic growth and development and also children actively involve themselves in lot of outdoor activities

Previous study by Adekoya et al (2004)<sup>38</sup> have determined that boys experience a tooth fracture at least twice as that of girls. Current study showed boys were 3.5 times more susceptible for tooth fracture than girls which also corroborates the findings of Patel and Sujana (2012),<sup>37</sup> Dua and Sharma (2012),<sup>43</sup> Prasad et al (2014).<sup>44</sup> The higher percentage of tooth fracture among boys than girls could be attributed to the fact that boys engage in outdoor leisure activities of a generally more aggressive nature; boys tending to be more energetic as compared to girls.<sup>37,44,13</sup> Even though the prevalence was higher among the boys there was no significant difference between boys and girls in impact of tooth fracture on OHRQoL.

India is a secular country incorporating diverse religious ethnic groups among which Hinduism is the most predominant of all religions. Even though a similar trend of prevalence is seen among the tooth fractures (Hindus with 78.7% of tooth fracture), negative OHRQoL was more reported among the Christians (70.4%)

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the reason remains unexplained. No previous studies have compared religion as a factor influencing the impact of tooth fracture on OHRQoL

The prevalence of permanent anterior tooth fracture was more among lower socioeconomic status (78.7%) with negative OHRQoL among lower and upper lower class similar to study by Ain et al (2016).<sup>45</sup> The negative OHRQoL among the lower strata could be influenced by the affordability, acceptability and the awareness of the child's parent.

School environment plays a major role in an individual's psychosocial development and thereby influencing the quality of life. A proportionate random sampling was carried out such that there were equal number of schools from each of the category in every zone of Chennai city. The prevalence of tooth fracture was higher among the corporation schools (41.2%%) similar to that reported by Ain et al (2016)<sup>45</sup> and in contrary to study by Ahlawat et al (2013).<sup>46</sup> Most of the children in the lower socio economic strata tend to be in corporation schools and those from the higher strata in the private schools. Hence the prevalence of tooth fractures being more in corporation schools. On contrary more fractures are reported in private schools by Ahlawat et al could be attributed to the fact that the students from the private schools have more sports facilities such as swimming pools, skates and skids and other different types of contact sports and thus they are more prone for tooth fractures.<sup>45</sup>

Majority of tooth fractures had occurred due to tripping or slipping in the current study in contrary to the study by Patel and Sujjan (2012)<sup>37</sup> where the major injuries had occurred due to pushing. The specific reason for occurrence of tooth fracture was collision against object followed by fall in contrary to the studies by

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Patel and Sujjan (2012)<sup>37</sup> and Govindarajan et al (2012)<sup>6</sup> which had reported fall as the major cause of injury followed by collision. Majority of the fracture had occurred at home similar to the study by Prasad et al (2014).<sup>44</sup> Surprisingly only 2.2% had underwent treatment for anterior teeth fracture which was similar to the study by Patel and Sujjan (2012)<sup>37</sup> and Govindarajan et al (2012).<sup>6</sup>

The most common type of tooth fracture was Class I fracture involving enamel only similar to previous studies reported by Piovesan et al (2011),<sup>20</sup> Traebert et al (2012)<sup>7</sup> and Prasad et al (2014).<sup>44</sup> A total of 784 teeth were fractured among 628 school children with only 21.3% having multiple tooth fractures similar to study by Govindarajan et al (2012).<sup>6</sup> In the present study, the maxillary central incisors were the most common affected tooth similar to previous studies Govindarajan et al (2012),<sup>6</sup> Patel et al (2012),<sup>37</sup> Alhawat et al (2013),<sup>46</sup> Bagchi et al (2016).<sup>13</sup> These findings probably relates to the vulnerable position of the maxillary central incisors, the first front teeth often to be exposed to the outer environment, hence most commonly affected by any kind of injury.<sup>13</sup> Further the force with which a trauma occurs also determines the type and multiplicity of the fracture.

The presence of anterior maxillary overjet of 4.2mm or more influenced the occurrence of tooth fracture in the current study whereas a similar study by Ain et al (2016)<sup>45</sup> and Patel and Sujjan (2012)<sup>37</sup> reports maxillary overjet of 3mm or more and 5.5mm or more respectively are associated with tooth fractures. Hence the maxillary overjet of 4mm or more substantiates the increase in prevalence of tooth fractures and thereby its impact on OHRQoL.

- **Limitation**

1. The study is a cross sectional study which assesses the OHRQoL of children who have met with trauma and have pre-existing tooth fracture at the time of examination. It does not take into consideration the assessment of OHRQoL before and after treatment of fractured teeth.
2. The study sample is limited to urban school children and does not take into consideration the schools of periurban and rural regions.

- **Recommendation:**

- Preventive oral health educational programme targeting the parents and school teachers should be conducted at regular intervals to inform them about the identification of tooth fracture and its modes of management.
- Adoption of health promotion and safety policies and closer supervision of children to avoid indulgence in fights and other aggressive activities.
- Promotion of usage of intraoral and extra oral devices such as mouth guards during sports
- Periodic continuing dental education programs about the latest technologies in the management of traumatized teeth could be organized for the dental and medical practitioners.

# **SUMMARY AND CONCLUSION**

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## **SUMMARY AND CONCLUSION**

Facial appearance and oral health-related problems can affect psychological and social well-being. This causes harmful complications to a child's well-being thereby diminishing their quality of life. A child develops a concern for their esthetic appearance at a very young age which may later affect their personality development. Children with untreated traumatic injuries to anterior teeth were more likely to experience a negative impact on social wellbeing, especially with regard to avoiding smiling or laughing and being more concerned about what other people may think or comment

Among the 7247 children, 628 had tooth fracture. This is surprisingly large number (8.7%), of these 78% were boys. All the children reporting with tooth fractures report negative oral health related quality of life especially in their functional wellbeing, socio-emotional wellbeing and in school environment domains. Age, religion, socio economic status, type of school and increased anterior maxillary overjet influenced the impact of permanent anterior teeth fracture on negative oral health related quality of life. The findings of this study add yet another reason to the set of arguments that stresses the importance of promoting good oral healthcare practices to prevent oral disease in children, and to meet children's unmet oral healthcare needs. The planners need to plan for tooth fractures also on a priority along with other oral disease.

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# **ANNEXURES**

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## ANNEXURE 1

### CHENNAI CORPORATION INFORMATION: CORPORATION ZONES

#### **Zone I Tondiarpet**

1. Kodungaiyur (West)
2. Kodungaiyur (East)
3. Dr.Radhakrishnan Nagar (North)
4. Cheriyan Nagar (North)
5. Jeeva Nagar (North)
6. Cheriyan Nagar (South)
7. Jeeva Nagar (South)
8. Korukkupet
9. Mottai Thottam
10. Kumarasamy Nagar (South)
11. Dr.Radhakrishnan Nagar (South)
12. Kumarasamy Nagar (North)
13. Vijayaragavalu Nagar (West)

#### **Zone II Basin Bridge**

14. Tondiarpet
15. Sanjeevirayanpet
16. Grace Garden
17. Ma-Po-Si Nagar
18. Royapuram
19. Singarathottam
20. Narayanappa Thottam
21. Old Washermenpet
22. Meenakshiammanpet
23. Kondithope
24. Sevenwells (North)
25. Amman Koil
26. Muthialpet
27. Vallalseethakathi Nagar
28. Kachaleeswarar Nagar
29. Sevenwells (South)
30. Sowcarpet
31. Basin Bridge

#### **Zone III Pulianthope**

32. Vyasarpet (South)
33. Vyasarpet (North)
34. Perambur (North)



35. Perambur (East)
36. Elango Nagar
37. Perambur (South)
38. Thiru-Vi-Ka Nagar
39. Wadia Nagar
40. Dr.Sathyavanimuthu Nagar
41. Pulianthope
42. Dr.Besant Nagar
43. Pedhunayakanpet
44. Perumal Koil Thottam
45. Thattankulam
46. Choolai
47. Poonga Nagar
48. Elephant Gate
49. Edapalayam

**Zone IV Ayanavaram**

50. Agaram (North)
51. Sembiam
52. Siruvalloor
53. Nagammai Ammaiagar Nagar
54. Agaram (South)
55. Vidhudalai Gurusami Nagar
56. Ayanavaram
57. Nagammaiammaiagar Nagar (South)
58. Panneer Selvam Nagar
59. Maraimalai Adigal Nagar
60. Maraimalai Adigal Nagar (South)
61. Purasawalkam
62. Kolathur
63. Villiwakkam (North)

**Zone V Kilpauk**

64. Villiwakkam (South)
  65. Virugambakkam (North)
  66. Anna Nagar (West)
  67. Anna Nagar (Central)
  68. Anna Nagar (East)
  69. Shenoy Nagar
  70. Kilpauk (North)
  71. Gangadeeswarar Koil
  72. Kilpauk (South)
  73. Amanjikai (North)
  74. Amanjikai (Central)
  75. Amanjikai (West)
-

- 76. Periyar Nagar (North)
- 77. Periyar Nagar (West)
- 78. Nungambakkam

**Zone VI Ice House**

- 79. Adikesavapuram
- 80. Nehru Nagar
- 81. Chintadripet
- 82. Komaleeswaranpet
- 83. Balasubramanya Nagar
- 84. Thiruvotteeswaranpet
- 85. Natesan Nagar
- 86. Chepauk
- 87. Zambazaar
- 88. Umaru Pulavar Nagar
- 89. Triplicane
- 90. Marina
- 91. Krishnampet
- 92. Bharathi Nagar
- 93. Azad Bgr (North)
- 94. Bharthidasan Nagar
- 95. Azas Nagar (South)
- 96. Vivekananda Puram

**Zone VII Nungambakkam**

- 97. Ajnuga Ammaiyyar Nagar
- 98. Kosappe W(G)
- 99. Pattalam Sc(G)
- 100. Anbazhagn Nagar
- 101. Perumalpe
- 102. Kannappar Nagar W(G)
- 103. Pattalam
- 104. Chetpet
- 105. Egmore
- 106. Pudupet
- 107. Ko-Su-Mani Nagar
- 108. Nakeerar Nagar
- 109. Thousand Lights
- 110. Azhagiri Nagar
- 111. Amir Mahal
- 112. Royapettah
- 113. Teynampet

**Zone VIII Kodambakkam**

- 114. Sathyamurthy Nagar
-

115. Alwarpet (North)
116. Alwarpet (South)
117. Vadapalani (West)
118. Vadapalani (East)
119. Kalaiivanar Nagar
120. Navalar Nedunchezian Nagar (West)
121. Navalar Nedunchezian Nagar (West)
122. Ashok Nagar
123. M.G.R. Nagar
124. Kamaraj Nagar (North)
125. Kamaraj Nagar (South)
126. Thyagaraya Nagar
127. Rajaji Nagar
128. Virugambakkam (South)
129. Saligarmam

**Zone IX Saidapet**

130. Kodambakkam (North)
131. Kodambakkam (South)
132. Saidapet
133. Kumaran Nagar (North)
134. Kumaran Nagar (South)
135. Saidapet (West)
136. Kalaingar Karunanidhi Nagar
137. V O C Nagar
138. G D Naidu Nagar (East)
139. G. D Naidu Nagar (West)
140. Guindy (West)
141. Guindy (East)

**Zone X Adyar**

142. Beemannahpettai
  143. Thiruvalluvar Nagar
  144. Madavaperumal Puram
  145. Karaneeswarapuram
  146. Santhome
  147. Mylapore
  148. Avvai Nagar (South)
  149. Raja Annamalai Puram
  150. Avvai Nagar (South)
  151. Adyar (West)
  152. Adyar (East)
  153. Velachery
  154. Thiruvanmiyur (West)
  155. Thiruvanmiyur (East)
-

**ANNEXURE 2**  
**LIST OF SCHOOLS**  
**LIST OF CORPORATION SCHOOLS**

<b>Zone: no</b>	<b>Zone name</b>	<b>School name</b>	<b>Address &amp; Phone number</b>
<b>I</b>	Tondiarpet	Chennai High school, Kodungaiyur	No: 105, Kamarajar salai, Kodungaiyur, Chennai-118. 044-25587644
<b>II</b>	Basin Bridge	Chennai High school, S.N.street	No: 88, S.N. street, Royapuram, Chennai-13. 044-25979175
<b>III</b>	Pulianthope	Chennai High school, Ganesapuram	No:3, Ganesapuram main street, Vyasarpadi, Chennai-39. 044-25518577
<b>IV</b>	Ayanavaram	Chennai High school, Somaiya Raja street	No: L21, Somaiar Raja street, Agaram, Chennai-82. 044-26703198
<b>V</b>	Kilpauk	Chennai High school, Kilpauk	No: 9, Thiyagappa street, Kilpauk Garden, Kilpauk, Chennai-10. 044-26601497
<b>VI</b>	Ice House	Chennai High school, Irusappa street	No: 7, Irusappa street, Triplicane, Chennai-5. 044-28441452
<b>VII</b>	Nungambakka m	Chennai High school, Strahans road	No: 4, Strahans road, Pattalam, Chennai-12. 044-26625538
<b>VIII</b>	Kodambakkam	Chennai High school, Kanniyappa nagar	No: 46, 83 <sup>rd</sup> street, Ashok nagar, Chennai-83. 044-23715530
<b>IX</b>	Saidapet	Chennai High school, Jafferkhanpet	No: 69, Pillaiyar kovil street, Jafferkhanpet, Chennai-83. 044-23715189
<b>X</b>	Adyar	Chennai High school, Kamaraj avenue	No: 76, 2 <sup>nd</sup> street, Kamaraj avenue, Adyar, Chennai-20. 044-24402971

**LIST OF GOVERNMENT AIDED SCHOOLS**

<b>Zone: no</b>	<b>Zone name</b>	<b>School name</b>	<b>Address &amp; Phone number</b>
<b>I</b>	Tondiarpet	Sree Gurumurthy Vidhyalaya high School	RV Nagar, Kodungaiyur, Chennai-600118
<b>II</b>	Basin Bridge	YMCA Boys Town High School	1 Binfield Road fort, Chennai. Phone: 044-25381851
<b>III</b>	Pulianthope	Hindu Union committee Higher secondary school	20/21 Kumarappa Mudali street, Choolai, Chennai -12 Phone: 044-26690780
<b>IV</b>	Ayanavaram	Railway colony matriculation higher secondary School, Ayanavaram, Chennai.	227, iistreet, Railway Quaters., Ayanavaram, Chennai-23. Phone:044-65378841
<b>V</b>	Kilpauk	St Joseph high school	No: 53, Susaipuram, Nungambakkam, Chennai-34. Phone:044-28170027
<b>VI</b>	Ice House	The Hindu higher secondary school, Triplicane, Chennai-05.	149, Big Street, Triplicane, Chennai-5 Phone: 044 2851 5162
<b>VII</b>	Nungambakkam	Christain high school.	188, Perambur barrack road, Pattalam, Chennai -12. Phone : 9444678468
<b>VIII</b>	Kodambakkam	Kaveri high school.	Harikrishnan street, Kaveri rangan nagar, Saligramam, Chennai-93. Phone: 044-23764807
<b>IX</b>	Saidapet	St .Francis Xavier high school	No: 3B, Little Mount Saidapet, Chennai – 15 Phone:044-22351610
<b>X</b>	Adyar	PS High School (North)	No: 215, Ramakrishnan Mutt Road, Mylapore, Chennai. Phone: 044-24983842

**LIST OF PRIVATE SCHOOLS**

<b>Zone no:</b>	<b>Zone name</b>	<b>School name</b>	<b>Address &amp; Phone number</b>
<b>I</b>	Tondiarpet	Seethakathi matriculation higher secondary school	19/23 & 24, 3rd St, Nethaji Nagar, Tondiarpet, Chennai-81 Phone: 044 2592 1713
<b>II</b>	Basin Bridge	Kamaraj matriculation higher secondary school, Old washermenpet, Chennai	45 Sanjeevirayan, Koil Street, Washermanpet, Chennai-21 Phone: 044-25978331
<b>III</b>	Pulianthope	Anaikar matriculation higher secondary school, Choolai, Chennai	No:72-B Sattannan street,Choolai,Chennai-112. Ph:no:26691171,9941577928
<b>IV</b>	Ayanavaram	Railway mixed higher secondary school, Perambur (Agaram)	No 26, Thiruvalluvar Road, Perambur, Chennai - 600011, Near Perambur Church Phone:044-26705379
<b>V</b>	Kilpauk	The Goodwill matriculation higher secondary school, Chennai.	55, 4th St, SRB Nagar, Villivakkam, Chennai-99 Phone: 044 2650 0747
<b>VI</b>	Ice House	The Muslim higher secondary school	278, Triplicane High Road, Triplicane, Chennai- 5 Phone: 98418 19786
<b>VII</b>	Nungambakkam	J.M. Matriculation school	No: 48, Ponnappa street, Purasaiwalkam, Chennai-84. Ph:no: 044-43533288.
<b>VIII</b>	Kodambakkam	Durga Matriculation higher secondary school, Kodambakkam, Chennai	No 1/49, Sivan Kovil Street, Kodambakkam, Chennai – 24 Phone:044-24802414, 24840588
<b>IX</b>	Saidapet	Cambridge matriculation higher secondary school, Saidapet, Chennai.	5 Rangabashyam Streetm,Saidapet, Chennai-15 Phone: 044 2485 1089
<b>X</b>	Adyar	Sivaskthi Matriculation school, Velachery, Chennai.	No.15, T.A.Koil 1st Cross street, 100 feet-bypass road, Velachery, Chennai –42 Phone:044 – 22554185

## ANNEXURE 3

PERMISSION LETTER TO SCHOOLS

க. து.ந.க.எண் ௮3/012753/2015

பெருநகர சென்னை மாநகராட்சி  
கல்வித்துறை

சென்னை மாநகராட்சி கல்வி அலுவலர் அவர்களின் செயல்முறை ஆணை செ-3,  
முன்னிலை:திருமதி D.ராட்சினி, எம்.ஏ.எம்.எஸ்.ஸி.பி.எட்., எம்பில்.

\*\*\*\*\*

பொருள்: பெருநகர சென்னை மாநகராட்சி - கல்வித்துறை - சென்னை உயர்நிலைப்பள்ளிகளில் பயிலும் மாணவ / மணவிகளுக்கு பல் சம்மந்தமான விழிப்புணர்வு ஆய்வுகள் நடத்துவதற்கு அனுமதி வழங்குதல் சார்பாக.

படிக்க: Dr. K. பிரியா தீப லட்சுமி, இரண்டாம் ஆண்டு முதுகலை பட்டப்படிப்பு பயிலும் மாணவி, அரசு பல் மருத்துவக்கல்லூரி மற்றும் மருத்துவமனை சென்னை - 03. அவர்களின் கடிதநாள்: 04.04.2015.

ஆணை:-

Dr. K. பிரியா தீப லட்சுமி, அரசு பல் மருத்துவக்கல்லூரி மற்றும் மருத்துவமனை சென்னை - 600003. இரண்டாம் ஆண்டு முதுகலை பட்டப்படிப்பு பயிலும் மாணவிக்கு 2016 ஆம் கல்வியாண்டில் வாய் சுகாதாரம், மற்றும் பல் சம்மந்தமான மருத்துவ குறிப்புகள் அடங்கிய கேள்வித்தாள்களை கீழ்க்கண்ட பள்ளி மாணவ / மாணவியர்களுக்கு வழங்கி அது சம்மந்தமான ஆய்வு நடத்துவதற்கு அனுமதி வழங்கப்படுகிறது.

வ. எண்	பள்ளியின் பெயர்
1	சென்னை உயர்நிலைப்பள்ளி, கொடுங்ககையூர்,
2	சென்னை உயர்நிலைப்பள்ளி, எஸ். என். செட்டி தெரு,
3	சென்னை உயர்நிலைப்பள்ளி, கணேசபுரம்,
4	சென்னை உயர்நிலைப்பள்ளி, சோமைய்யா ராஜா,
5	சென்னை உயர்நிலைப்பள்ளி, கீழ்ப்பாக்கம்,
6	சென்னை உயர்நிலைப்பள்ளி, இருசப்பா,
7	சென்னை உயர்நிலைப்பள்ளி, ஸ்டூடென்ட்ஸ் ரோடு,
8	சென்னை உயர்நிலைப்பள்ளி, கண்ணியப்பன் நகர்,
9	சென்னை உயர்நிலைப்பள்ளி, ஜாபர்கான் பேட்டை,
10	சென்னை உயர்நிலைப்பள்ளி, காமராஜ அலுவலர்,

மேற்காணும் மாணவி மருத்துவ குறிப்பு வழங்கும்போது பள்ளிக்கும் பள்ளி பணிக்கும் எவ்வித பாதிப்பும் ஏற்படாவண்ணம் பாத்துக்கொள்ளுமாறு அறிவுறுத்தப்படுகிறது.

பெறுநர் :

Dr. K. பிரியா தீப லட்சுமி, இரண்டாம்  
ஆண்டு முதுகலை பட்டப்படிப்பு பயிலும் மாணவி,  
அரசு பல் மருத்துவக்கல்லூரி மற்றும் மருத்துவமனை  
சென்னை - 03.

நகல் : மேற்காணும் பள்ளி தலைமை ஆசிரியர்கள்

D. Ranjini  
கல்வி அலுவலர்  
1/6/2016

**From**  
**The Principal**  
Tamil Nadu Government Dental College and Hospital,  
Chennai-600003.

**To**  
**The Chief Educational Officer,**  
Department of Education,  
Panagal Building 1st Floor,  
Saidapet,  
Chennai – 600015.

Respected Sir/Madam,

Sub: Permission to conduct survey in the schools- Reg

I hereby informing you Sir/Madam that Dr.K.Priya Deepa Lakshmi II Year postgraduate student of the Department of Public Health Dentistry is planning to conduct a survey for her thesis titled **“Impact of traumatic dental injuries on oral health related quality of life among school children in Chennai city -A cross-sectional survey”**. Hence I kindly request you to grant her permission to conduct survey and to do the needful.

Thanking you,

  
6/4/16  
Yours faithfully,

Place: Chennai  
Date:04.04.2016

Forwarded to  
the needful.

ggsd  
28/4/16  
CEO.



## ANNEXURE 4

## Master table showing various factors influencing permanent anterior teeth fractures and its impact on OHRQoL among study participants

No	School	Age	Sex	SES	Teeth	Q16	Q17	Q18	Q19.4	Q19.5	Type of trauma	OH	F	SW	SE	SI	Total score
1	1	10	2	4	22	1	1	1	0	1	1	22	15	17	14	14	82
2	1	11	2	4	11,21	1	3	1	0	1	2,2	19	16	7	16	18	76
3	1	10	2	4	22	1	1	1	1	1	1	24	18	24	16	19	101
4	1	10	2	4	22	6	3	1	2	1	1	22	6	24	16	20	88
5	1	12	2	4	22	1	1	1	0	1	1	24	24	32	16	0	96
6	1	13	1	4	22	7	1	1	1	1	1	19	24	32	16	18	109
7	1	10	1	4	22	1	3	1	0	1	2	21	24	15	16	16	92
8	1	10	1	4	11	1	1	1	0	1	1	24	24	32	16	18	114
9	1	11	1	4	21	1	1	1	1	1	1	24	18	32	16	14	104
10	1	12	1	4	22	6	3	1	1	1	1	18	24	32	16	19	109
11	1	11	1	4	21	6	3	1	0	1	2	24	24	32	16	18	114
12	1	12	1	4	22	4	1	1	1	1	1	19	24	32	16	18	109
13	1	11	1	4	11,21	1	1	1	0	1	1,1	21	24	32	16	18	111
14	1	12	2	4	21	1	1	1	0	1	1	24	24	32	16	17	113
15	1	12	1	4	11	3	3	1	0	1	1	18	9	32	16	16	91
16	1	12	1	4	42	3	3	1	0	1	1	21	6	29	16	16	88
17	1	12	1	5	21	1	1	1	1	1	1	24	24	32	16	20	116
18	1	10	1	4	21	1	3	1	0	1	1	24	24	32	16	10	106
19	1	10	1	4	22	4	3	3	1	1	1	21	18	32	16	16	103
20	1	11	1	4	11,21	7	2	1	0	1	5,2	21	6	8	16	20	71
21	1	13	1	4	11	1	1	2	0	1	4	18	24	2	16	4	64
22	1	14	1	4	21	6	1	5	1	1	1	24	24	32	16	3	99
23	1	15	1	4	21	4	1	2	1	1	1	24	24	32	16	1	97
24	1	13	1	4	11	6	3	1	0	1	1	20	21	32	16	2	91
25	1	15	1	4	11	7	1	2	0	1	4	18	18	32	16	3	87
26	1	9	2	4	11	6	3	1	0	1	1	21	18	32	16	13	100
27	1	8	2	4	21	1	3	1	0	1	1	24	24	32	16	6	102
28	1	9	2	5	21	6	3	1	0	1	1	24	24	32	16	15	111
29	1	12	1	4	11,21	6	3	1	0	1	1,1	20	10	32	16	14	98
30	1	12	1	4	41	1	3	2	0	1	1	21	21	32	16	16	106
31	1	12	2	4	11	1	1	1	0	1	1	24	24	32	16	20	116
32	1	12	1	4	11	4	3	3	0	1	2	21	16	3	16	15	71
33	1	12	1	4	11	4	1	2	1	1	1	24	24	32	16	18	114
34	1	14	1	4	11,21	4	1	4	0	1	2,2	16	24	32	16	2	90
35	1	14	2	4	21	4	3	1	0	1	2	17	18	6	16	0	57
36	1	14	1	4	21	1	1	1	0	1	1	24	24	32	16	5	101
37	1	14	1	4	21	1	1	1	0	1	1	20	24	26	16	2	88
38	1	14	1	4	22	1	3	1	0	1	1	24	24	32	16	0	96
39	2	13	1	4	12	6	3	1	0	1	1	20	21	32	16	8	97
40	2	13	1	4	11	1	1	1	0	0	1	24	24	32	16	8	104
41	2	15	1	4	11	6	1	1	0	1	1	24	24	32	16	19	115
42	2	15	1	4	21	7	1	1	0	1	2	21	16	26	16	11	90
43	2	13	1	4	22	8	2	1	0	1	2	20	16	21	16	10	83
44	2	15	2	4	21	3	2	2	0	1	1	20	24	32	16	14	106
45	2	13	2	4	22	2	3	1	0	1	1	24	24	32	16	13	109
46	2	14	2	4	21,22	6	3	3	0	1	1,5	24	24	32	16	12	108

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47	2	11	1	4	11	7	3	1	0	1	2	24	24	32	16	7	103
48	2	11	1	4	22	4	3	2	0	1	1	21	24	32	16	10	103
49	2	12	1	4	11	1	3	1	0	1	1	21	18	32	16	12	99
50	2	12	1	4	11,21	6	3	1	0	1	1,1	22	24	32	16	12	106
51	2	14	1	4	21	1	3	1	0	1	1	24	20	32	16	15	107
52	2	13	1	4	11	6	3	6	0	1	2	20	16	29	10	15	90
53	2	14	1	4	21	4	3	3	0	1	1	20	24	29	16	18	107
54	2	14	2	4	12,21	1	3	2	0	1	1,1	24	24	32	16	12	108
55	2	12	2	4	21	6	3	3	0	1	1	24	24	29	16	14	107
56	2	10	2	4	11	6	3	1	0	1	2	21	24	32	16	12	105
57	2	9	1	4	11	1	3	1	0	1	1	22	24	32	16	6	100
58	2	10	1	4	21	1	1	1	0	1	1	21	24	32	16	12	105
59	2	10	1	4	11	6	3	3	0	1	1	24	24	32	16	7	103
60	2	10	1	4	11	3	3	1	0	1	1	20	21	32	16	11	110
61	2	12	1	4	32	4	3	3	0	1	1	24	24	32	16	18	114
62	2	11	1	4	21	4	3	3	0	1	1	21	24	32	16	13	106
63	2	11	1	4	12,22	6	2	1	0	1	1,1	24	24	32	16	14	110
64	1	9	2	4	21	6	3	1	0	1	1	20	16	32	16	12	96
65	1	10	2	5	21	6	3	6	0	1	1	20	16	24	16	13	89
66	1	10	2	4	11	5	3	6	0	1	1	20	16	32	16	14	98
67	1	9	1	4	21	7	1	1	0	1	1	22	20	32	16	6	96
68	1	9	1	4	21	6	3	4	0	1	1	20	16	16	16	12	80
69	1	9	1	4	11,21	6	3	1	0	1	2,2	20	16	32	16	6	90
70	1	10	1	4	21	6	1	5	0	1	1	20	16	32	16	15	99
71	1	8	1	4	21	1	3	1	0	1	1	20	16	32	16	13	97
72	1	8	2	4	32	6	3	1	0	1	1	20	16	32	16	9	93
73	1	12	2	4	11	6	3	1	0	1	1	20	16	32	16	4	88
74	1	13	1	4	21	6	3	1	0	1	1	20	24	32	16	9	93
75	1	12	1	4	11	6	3	1	0	1	1	24	24	32	16	6	102
76	1	11	2	4	21	6	3	1	0	1	1	22	24	32	16	4	98
77	1	12	1	4	12	2	3	1	0	1	4	16	16	32	16	11	91
78	1	12	1	4	11	6	3	2	0	1	1	23	20	32	16	6	97
79	1	12	1	4	21	6	3	1	0	1	1	20	16	32	16	11	95
80	1	12	1	4	21	6	1	2	0	1	1	20	16	32	16	4	90
81	1	12	1	4	21	6	3	2	0	1	1	20	16	32	16	11	95
82	1	12	1	5	22	6	3	2	0	1	1	20	21	32	16	4	93
83	1	12	1	4	11,21	6	3	6	3	1	1,1	20	13	32	16	12	93
84	1	14	1	4	21	5	3	6	3	1	1	20	24	32	16	7	99
85	1	15	1	4	11	1	3	1	3	1	1	24	24	32	16	6	102
86	1	14	2	4	21	6	1	1	0	1	1	20	24	26	16	4	90
87	1	15	1	4	11,21	7	1	1	0	1	1,1	24	24	5	16	9	78
88	1	13	1	4	11	6	1	5	4	1	1	20	16	0	16	7	59
89	1	15	2	4	11,21	6	1	1	0	1	1,1	20	16	24	16	11	87
90	1	13	2	4	11	6	1	1	0	1	1	20	24	32	16	6	98
91	1	11	2	5	21	1	3	2	0	1	1	24	24	32	16	8	104
92	1	12	1	4	21	6	3	2	0	1	1	20	12	32	16	4	84
93	1	13	1	4	42	0	0	0	0	1	1	20	18	32	16	14	100
94	1	12	1	4	12	6	3	1	0	1	1	24	21	32	16	0	93
95	1	14	1	4	21	4	3	2	4	1	1	24	24	32	16	7	103
96	1	13	1	4	42	6	3	3	0	1	1	21	24	32	16	6	99
97	1	14	1	4	11	6	3	1	0	1	2	21	18	32	16	6	93
98	1	14	1	4	21	4	2	1	0	1	1	21	18	32	16	6	93
99	1	14	2	4	11	1	1	2	0	1	1	20	16	32	16	2	86
100	1	12	2	4	11	2	1	1	0	1	1	20	16	32	16	4	88

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101	1	12	1	4	21	6	3	1	0	1	1	20	16	32	16	6	90
102	1	14	1	4	21	7	3	1	0	1	1	20	16	32	16	6	90
103	1	12	1	5	11,21	1	3	2	0	1	1,1	24	24	32	16	6	102
104	1	15	1	4	11	4	3	3	0	1	1	20	16	32	16	6	90
105	1	10	1	4	11	1	3	2	0	1	1	20	24	32	16	4	96
106	1	10	1	4	21	6	3	2	0	1	1	24	24	32	16	12	108
107	1	10	1	4	11,21	5	3	2	0	1	1,2	20	16	32	16	6	90
108	1	14	1	4	11	4	3	3	1	1	1	24	24	32	16	0	96
109	1	13	1	4	21	1	3	1	0	1	1	20	16	32	16	4	88
110	1	13	1	4	21	1	1	2	2	1	1	24	24	32	16	2	98
111	1	14	1	4	11	3	1	2	0	1	1	24	24	32	16	2	98
112	1	14	1	4	11	6	3	2	3	1	2	24	24	32	16	2	98
113	1	15	2	4	11	7	1	1	0	1	1	24	24	32	16	0	96
114	1	14	2	4	11	7	1	1	1	1	1	24	24	32	16	2	98
115	1	13	2	4	21	6	3	1	0	1	1	22	24	32	16	0	94
116	1	15	1	4	21	6	3	1	0	1	1	20	16	32	16	6	90
117	1	15	2	4	21	1	3	2	0	1	1	24	24	32	16	4	100
118	1	14	2	4	21	1	3	1	0	1	2	20	8	0	16	6	50
119	1	14	2	4	21	6	3	2	0	1	4	20	4	0	16	6	46
120	1	14	2	4	21	7	1	1	0	1	1	24	24	32	16	0	96
121	1	15	2	4	21	8	3	2	0	1	1	20	24	32	16	6	98
122	1	14	2	4	21	6	3	1	0	1	1	24	24	32	16	0	96
123	1	14	2	4	21	6	3	1	0	1	1	20	16	0	16	5	57
124	1	15	2	4	11,21	6	3	1	0	1	2,4	20	16	0	16	9	61
125	1	13	2	4	21	6	3	1	0	1	1	20	16	8	16	11	71
126	1	13	2	5	21	6	3	1	0	1	1	20	24	32	16	6	98
127	1	13	2	4	11	6	3	1	0	1	1	24	24	32	16	6	102
128	1	13	2	4	21	7	1	3	0	1	1	20	16	32	16	6	90
129	1	13	2	4	11,21	6	3	1	0	1	1,4	16	4	0	16	5	41
130	1	14	1	5	21	6	1	4	0	1	1	20	20	20	16	4	80
131	1	13	1	4	21	7	1	3	0	1	1	20	16	23	16	5	80
132	1	14	1	4	31	7	3	6	0	1	1	20	16	16	16	6	74
133	1	15	1	4	22	7	1	1	0	1	2	20	18	8	16	4	66
134	1	15	1	4	11	3	2	2	0	1	1	20	16	0	16	4	56
135	1	13	1	4	21	6	3	1	0	1	1	20	16	27	16	4	83
136	1	14	1	4	21,22	4	3	6	0	1	4,1	20	16	8	16	4	64
137	1	14	2	4	11,12,21,22	7	1	2	0	1	4,4,1,1	20	12	0	16	4	52
138	1	14	2	4	11,21	4	2	3	0	1	1,2	24	24	0	16	4	68
139	1	10	1	4	11	6	3	2	0	1	1	20	16	20	16	4	76
140	1	14	1	4	21	1	3	2	0	1	2	24	16	0	16	4	60
141	1	11	1	5	11,21	6	3	2	0	1	1,1	20	12	32	16	7	87
142	1	11	1	4	11,12,13,22,23	3	3	5	0	1	1,1,1,1,1	24	24	32	16	0	96
143	1	13	1	4	12,41	5	3	3	0	1	1,1	20	20	32	16	4	92
144	1	14	1	4	11	6	3	2	0	1	1	20	24	32	16	4	96
145	1	15	1	4	21	1	1	6	0	1	1	20	16	7	16	5	64
146	1	13	1	4	11,21	4	2	3	0	1	1,1	24	16	0	16	4	60
147	1	14	1	4	11	6	3	5	0	1	2	20	4	0	16	5	45
148	1	14	1	4	11	5	3	6	0	1	1	20	4	0	16	4	44
149	1	14	1	4	11,21	6	3	2	0	1	1,1	20	4	0	16	4	44
150	1	15	1	4	21	6	2	1	0	1	1	20	4	8	16	4	52
151	1	14	1	4	21	4	3	5	0	1	1	24	24	32	16	5	101
152	1	14	2	5	21	6	3	1	0	1	1	24	4	0	16	10	54
153	1	14	1	4	21	6	1	2	0	1	1	20	4	0	16	4	44
154	1	13	1	4	21,22	6	3	4	0	1	2,1	20	4	0	16	0	40

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155	1	14	1	4	21	3	3	1	0	1	1	20	16	32	16	4	88
156	1	14	1	4	21	6	1	3	0	1	1	20	16	4	16	4	60
157	1	14	1	4	11,21	5	3	6	0	1	1,1	24	24	32	16	4	100
158	1	14	2	4	11	5	3	5	0	1	1	20	4	0	16	4	44
159	1	15	2	4	21	1	1	2	0	1	1	20	4	0	16	4	44
160	1	12	2	4	21	1	1	2	0	1	1	20	4	32	16	5	77
161	1	10	1	5	21	6	1	1	0	1	1	20	16	0	16	7	59
162	1	15	1	4	11,21	6	3	2	0	1	1,4	17	16	28	16	4	81
163	1	11	1	4	12	6	2	1	0	1	1	20	16	26	16	4	82
164	1	12	1	4	11,21	6	2	1	0	1	2,2	20	16	32	16	5	89
165	1	12	1	5	21	6	3	1	0	1	1	20	16	20	16	4	76
166	1	12	1	4	11	1	2	2	0	1	1	20	24	32	16	4	96
167	1	14	1	4	21	6	3	2	0	1	7	20	0	0	16	5	41
168	1	13	1	5	21	6	1	2	0	1	1	22	24	14	16	1	77
169	1	13	1	4	21	7	1	1	0	1	1	21	12	23	16	4	76
170	1	15	1	4	11,21	6	3	4	0	1	2,2	16	0	0	16	2	34
171	1	15	1	4	11	2	1	1	0	1	1	24	24	32	16	0	96
172	1	14	1	4	12	1	1	2	0	1	1	20	16	32	16	4	88
173	1	9	1	5	21	6	1	1	0	1	1	20	4	0	16	4	44
174	1	9	1	4	21	1	1	2	2	1	1	24	24	32	16	0	96
175	1	10	2	4	11	6	1	1	0	1	1	20	24	32	16	4	96
176	1	10	1	4	21	1	2	2	0	1	1	20	24	32	16	4	96
177	1	13	2	4	21	6	3	3	0	1	1	24	20	0	16	2	62
178	1	11	1	4	22	6	3	1	0	1	1	24	24	32	16	4	100
179	1	11	1	4	21	6	3	2	0	1	1	20	4	0	16	3	43
180	1	11	1	4	32	6	1	2	0	1	1	20	12	0	16	5	53
181	1	11	1	4	11	7	1	2	0	1	4	20	5	2	16	5	48
182	1	11	1	4	11	6	1	2	0	1	1	24	24	32	16	1	97
183	1	9	1	4	31	6	3	1	0	1	1	20	24	32	16	4	96
184	1	10	2	4	11,21	6	3	6	0	1	1,1	24	24	32	16	5	101
185	1	10	2	4	21	6	2	5	0	1	1	20	24	32	16	1	93
186	1	9	1	5	21	6	1	2	0	1	1	20	9	16	16	4	65
187	1	10	1	5	11,21	1	1	2	0	1	1,1	20	14	23	16	5	78
188	1	10	1	5	11	7	1	1	0	1	1	20	24	32	16	5	97
189	1	9	1	4	21	6	3	1	0	1	1	20	9	16	16	9	70
190	1	9	1	5	11	1	1	1	0	1	1	24	24	32	16	4	100
191	1	9	1	4	11,21	6	3	5	0	1	2,1	20	9	8	16	5	58
192	1	9	1	4	11,21,,22	6	1	2	0	1	1,1,1	20	4	0	16	5	45
193	1	10	2	4	12	2	3	1	0	1	1	21	18	26	16	6	87
194	1	11	1	4	11,21	6	3	5	0	1	2,1	20	16	0	16	8	60
195	1	10	2	5	21	4	3	3	0	1	1	24	24	32	16	0	96
196	1	11	1	4	21,22	7	1	2	0	1	1,1	20	24	32	16	6	98
197	1	11	1	5	21	6	2	1	0	1	1	20	16	0	16	10	62
198	1	11	2	4	11,21	6	3	2	0	1	1,2	24	24	8	16	4	76
199	1	11	1	4	11	6	3	3	0	1	1	20	4	32	16	9	81
200	1	14	1	4	11,41	8	2	3	0	1	1,1	20	24	32	16	6	98
201	1	11	1	5	11,21	6	3	3	0	1	1,1	24	24	32	16	4	100
202	1	14	1	5	41	6	3	1	0	1	2	24	24	32	16	3	99
203	1	15	1	4	21,41	1	1	2	0	1	1,1	24	24	32	16	4	100
204	1	13	1	4	11,21	7	1	1	0	1	1,2	20	4	0	16	10	50
205	1	12	1	4	11,21	8	3	5	0	1	1,1	22	24	0	16	8	70
206	1	13	1	4	21	6	3	3	0	1	1	20	4	8	16	9	57
207	1	12	1	4	21,32	1	3	1	0	1	1,1	20	24	32	16	4	96
208	1	13	1	4	11,21	4	2	3	0	1	1,1	20	4	0	16	5	45

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209	1	15	1	4	11	6	3	4	0	1	1	20	0	32	16	8	76
210	1	14	1	4	11	4	3	3	0	1	1	22	16	32	16	4	90
211	1	15	1	4	11	6	1	1	0	1	1	20	9	16	16	4	65
212	1	14	1	3	21	6	1	1	0	1	1	20	6	8	16	6	56
213	1	15	1	4	11,21	1	1	2	0	1	1,1	20	6	16	16	8	66
214	1	15	1	4	21	6	1	1	0	1	1	20	24	8	16	4	72
215	1	13	1	4	11	1	1	1	0	1	1	20	16	16	16	10	78
216	1	15	1	4	11,12,21	6	1	2	0	1	1,1,1	20	24	32	16	5	97
217	1	15	1	4	11,21	6	3	6	0	1	1,1	20	6	32	16	6	80
218	1	14	1	4	11,21	6	3	2	0	1	1,2	20	0	0	16	8	44
219	1	15	1	5	11,41	6	3	3	0	1	1,1	20	6	16	16	16	74
220	1	13	1	5	21,22	2	2	2	0	1	1,1	20	24	32	16	4	96
221	1	14	1	4	21	3	3	1	0	1	1	20	24	32	16	3	95
222	1	14	1	4	11,21	1	1	1	0	1	2,2	20	0	0	16	6	42
223	1	14	1	4	11	6	3	2	0	1	1	20	4	0	16	6	46
224	1	14	1	4	21	6	1	3	0	1	4	20	0	0	16	12	48
225	1	14	1	4	21	7	1	2	0	1	1	21	0	0	16	18	55
226	1	12	1	4	21	6	3	1	0	1	1	21	4	0	16	5	46
227	1	13	1	5	11,42	4	2	3	0	1	2,1	20	4	8	16	5	53
228	1	11	2	4	21	6	2	2	0	1	2	24	0	32	16	4	76
229	1	13	1	4	11,21	6	3	1	0	1	1,1	20	4	32	16	5	73
230	1	12	2	4	21	6	3	3	0	1	1	20	4	0	16	5	45
231	1	13	2	4	11,21	6	2	2	0	1	1,1	20	0	8	16	7	51
232	1	12	1	4	11,21	5	2	6	0	1	1,1	20	9	8	16	5	58
233	1	13	1	4	21	6	3	3	0	1	1	20	9	32	16	5	82
234	1	13	1	4	11,21,22	6	3	3	0	1	1,1,1	20	6	32	16	6	80
235	1	13	1	5	21	6	1	6	0	1	1	20	6	16	16	14	72
236	1	8	1	5	11,21	7	1	1	0	1	1,1	20	24	32	16	2	94
237	1	8	2	4	11	6	1	5	0	1	1	20	12	16	16	4	68
238	1	11	1	4	11	1	1	1	0	1	1	24	24	32	16	4	100
239	1	12	2	5	21	1	1	2	0	1	1	20	24	32	16	4	96
240	1	11	1	4	11	6	1	1	0	1	1	20	16	8	16	10	70
241	1	13	1	4	31	5	2	6	0	1	1	24	24	32	16	4	100
242	1	10	1	5	21	1	1	2	0	1	2	20	16	8	16	4	64
243	1	11	2	4	11	6	1	2	0	1	2	20	0	0	16	8	42
244	1	11	1	4	11,21	6	1	5	0	1	1,1	20	4	0	16	6	46
245	1	10	1	4	11,12,21	8	1	6	0	1	1,1,1	20	4	0	16	5	45
246	1	13	2	4	21	6	3	1	0	1	1	24	24	32	16	4	100
247	1	13	1	4	11,21	6	1	1	0	1	1,1	20	0	18	12	5	55
248	1	14	1	5	41	6	3	2	0	1	2	20	0	0	16	4	40
249	1	10	2	4	21	6	3	1	0	1	1	20	22	32	16	4	94
250	1	9	2	4	11,21,22	4	2	3	0	1	1,1,1	24	24	32	16	4	100
251	1	11	2	5	11	6	1	1	0	1	1	24	24	32	16	6	102
252	1	11	1	4	11	6	3	2	0	1	1	20	24	32	16	7	99
253	1	12	2	5	21	6	1	1	0	1	4	20	15	8	16	13	72
254	1	10	2	4	11	7	1	2	0	1	1	21	24	32	16	4	97
255	1	12	1	4	11	1	1	1	0	1	1	20	18	8	16	8	70
256	1	12	2	4	31	3	3	1	0	1	1	20	14	16	16	15	81
257	1	13	2	4	12	4	3	3	0	1	1	20	24	32	16	5	87
258	1	13	2	4	21	4	1	3	0	1	1	24	24	32	16	2	98
259	1	14	1	4	42	1	1	1	1	1	1	20	24	32	16	4	96
260	1	14	1	4	21	6	1	1	0	1	1	21	24	32	16	4	97
261	1	13	2	4	11,21	1	1	2	0	1	1,1	24	24	32	16	6	102
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265	1	15	1	4	21	1	1	1	0	1	1	24	24	32	16	2	98
266	1	15	1	4	21	6	1	1	0	1	4	20	4	0	16	2	42
267	1	14	1	4	11	6	1	1	0	1	1	24	24	32	16	2	98
268	1	15	1	5	11,21	4	2	3	0	1	1,5	24	4	0	16	6	50
269	1	15	1	5	11,21	6	3	2	0	1	1,1	24	24	32	16	4	100
270	1	15	1	4	11	1	1	2	0	1	1	24	24	32	16	6	102
271	1	13	1	4	21	6	3	5	0	1	1	20	24	32	16	0	92
272	1	15	1	5	11,21	5	3	6	0	1	1,2	20	4	0	16	4	44
273	1	14	1	4	11	6	3	4	0	1	1	24	24	32	16	7	103
274	1	15	1	4	11,21	6	1	2	0	1	1,2	20	0	0	16	4	40
275	1	13	1	4	11	6	1	1	0	1	1	24	24	32	16	4	100
276	1	12	1	5	21	6	3	1	0	1	1	24	24	32	16	4	100
277	1	14	1	4	11,21	6	1	3	0	1	1,1	20	24	32	16	2	98
278	1	14	1	5	11	6	1	1	1	1	1	20	24	32	16	7	103
279	1	14	1	4	11	6	1	2	0	1	2	24	4	0	16	5	49
280	1	15	1	4	21	6	3	6	0	1	1	20	24	32	16	5	97
281	1	15	1	4	11,21	2	1	2	0	1	2,1	20	24	32	16	5	97
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283	1	12	1	4	11,21	6	2	5	0	1	1,2	20	24	32	16	9	105
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286	2	15	1	3	11	5	3	3	0	1	1	24	24	32	16	4	100
287	2	9	1	4	21	1	1	1	0	1	1	24	24	32	16	5	101
288	2	13	2	4	12	6	3	1	0	1	1	20	24	32	16	6	98
289	2	15	2	4	11	4	2	2	0	1	1	24	24	32	16	0	96
290	2	9	1	4	21	6	3	2	0	1	1	24	24	32	16	0	96
291	2	15	1	3	21,22	6	3	2	0	1	2,1	22	4	0	16	6	48
292	2	15	1	4	11	6	1	6	0	1	1	24	24	32	16	6	102
293	2	14	1	4	11,21	6	3	1	0	1	1,4	20	4	0	16	4	44
294	2	13	1	4	21	4	2	3	0	1	1	21	4	0	16	4	45
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298	3	10	1	3	11	4	2	5	0	1	1	24	24	32	16	6	102
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300	3	8	1	3	11	6	3	2	0	1	1	22	14	16	16	4	72
301	3	8	2	4	11	7	1	1	0	1	1	24	24	32	16	4	100
302	3	8	1	3	21	6	3	6	0	1	1	24	24	32	16	9	105
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305	3	9	1	3	21	4	1	5	0	1	1	20	18	28	16	9	91
306	3	10	1	4	21	1	1	1	0	1	1	24	24	32	16	12	108
307	3	10	1	3	21	6	1	3	0	1	1	20	24	32	16	6	98
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311	3	11	1	2	21	7	1	1	0	1	2	20	8	0	16	6	50
312	3	11	1	3	21	3	3	1	1	1	2	20	8	8	16	11	63
313	3	10	1	3	21	6	1	4	0	1	1	24	24	32	16	10	106
314	3	11	1	4	32	6	3	6	0	1	1	24	24	32	16	2	98
315	3	13	1	3	21	5	3	6	0	1	1	20	16	8	16	6	66
316	3	14	1	3	11,21	4	3	3	2	1	1,1	24	24	32	16	10	106

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319	3	13	2	2	21	7	1	1	0	1	1	24	24	32	16	5	101
320	3	13	1	3	21	3	3	1	0	1	1	20	12	8	16	11	67
321	3	13	2	3	21	6	1	2	1	1	1	20	24	32	16	4	96
322	3	14	2	3	21	7	3	5	1	1	1	24	24	32	16	9	105
323	3	13	1	3	21	4	3	6	0	1	1	20	12	0	16	12	60
324	3	14	1	3	11,21	6	1	2	0	1	1,2	20	8	0	16	10	54
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326	3	14	1	3	12	6	2	2	0	1	1	24	24	32	16	11	107
327	3	13	1	3	22	6	3	1	0	1	1	24	24	32	16	2	98
328	3	13	2	3	21	6	1	2	0	1	1	20	18	14	16	12	80
329	3	13	2	3	21	5	3	6	0	1	1	24	24	32	16	6	102
330	2	12	1	4	22	6	3	1	0	1	1	24	24	32	16	4	100
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332	2	12	1	4	21	6	3	1	0	1	1	20	4	11	16	12	63
333	2	11	1	4	21	4	3	2	0	1	1	24	12	32	16	5	89
334	2	11	1	4	31	4	3	3	0	1	1	20	24	32	16	4	96
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336	2	11	1	4	11,21	6	1	2	0	1	1,4	21	4	32	16	5	78
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343	2	12	1	4	11	7	1	1	0	1	1	24	24	32	16	5	101
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345	2	11	1	4	11,12,21,22	6	1	1	0	1	1,1,1,1	20	4	4	16	5	49
346	2	13	1	4	11	1	3	1	2	1	1	24	24	32	16	0	96
347	2	9	1	4	11	6	3	2	0	1	1	24	24	32	16	5	101
348	2	11	1	4	21	6	2	5	0	1	1	24	24	32	16	7	103
349	2	12	1	4	11,21	8	1	2	0	1	1,1	24	24	32	16	0	96
350	2	12	1	4	21	6	1	1	0	1	1	20	24	32	16	9	101
351	2	12	1	4	11	6	3	1	0	1	1	20	0	11	16	4	51
352	2	13	1	4	11	3	1	1	0	1	1	24	24	32	16	0	96
353	2	11	1	4	21	6	3	1	0	1	1	20	12	12	16	5	65
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355	2	12	1	5	11,21	4	1	3	0	1	1,1	20	4	14	16	5	59
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357	2	11	1	4	21	6	3	1	0	1	1	20	6	17	16	6	65
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359	2	14	1	4	21	6	1	1	0	1	1	24	24	32	16	0	96
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364	2	14	1	5	11,21	6	1	2	0	1	1,1	24	24	32	16	0	96
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367	2	14	1	4	11	3	1	2	0	1	1	24	24	32	16	0	96
368	2	14	1	4	21	6	3	2	0	1	1	20	24	32	16	5	97
369	2	13	1	4	11	6	3	1	0	1	1	20	24	32	16	4	96
370	2	13	1	4	21	1	1	2	0	1	1	24	24	32	16	5	101

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371	2	13	1	4	21	6	3	2	0	1	1	24	24	32	16	0	96
372	2	11	1	4	11	6	3	5	0	1	1	24	24	32	16	0	96
373	2	11	1	4	11,21	4	2	3	0	1	1,1	20	12	4	16	8	60
374	2	13	1	5	21	1	1	1	0	1	1	24	24	32	16	0	96
375	2	13	1	4	21	1	1	1	0	1	2	20	12	8	16	5	61
376	2	12	1	4	11,21,22	1	1	2	0	1	1,5,1	20	4	0	16	6	46
377	2	12	2	4	21	6	3	1	0	1	1	24	24	32	16	4	100
378	2	11	1	4	21	1	1	2	0	1	1	24	24	32	16	5	101
379	2	14	1	4	11	2	1	1	0	1	1	24	24	32	16	4	100
380	2	14	1	4	21	1	1	2	3	1	1	20	24	32	16	5	97
381	2	15	1	4	11	6	3	1	0	1	1	20	24	32	16	5	97
382	2	15	1	4	21	6	3	1	0	1	1	20	16	4	16	6	62
383	2	13	1	4	21	4	2	3	0	1	1	20	12	4	16	6	58
384	2	14	1	4	11,21	5	3	4	0	1	1,1	24	24	32	16	0	96
385	2	14	1	4	11,21	6	3	5	0	1	4,4	24	0	0	16	12	52
386	2	14	1	4	11,21	1	1	2	0	1	1,1	24	24	32	16	0	96
387	2	15	2	4	21	6	1	1	0	1	1	20	24	4	16	4	68
388	2	14	2	4	11	6	1	2	0	1	1	24	24	32	16	5	101
389	2	14	1	4	11	3	1	2	0	1	1	24	24	32	16	5	101
390	2	14	2	4	11,21	1	1	2	0	1	1,1	24	24	32	16	0	96
391	2	10	1	4	21	8	2	1	0	1	2	20	4	4	16	6	50
392	2	12	1	5	21	6	1	1	0	1	1	20	24	4	16	5	69
393	2	11	1	4	11,21	6	3	2	0	1	1,1	20	24	32	16	9	101
394	2	12	1	4	11,21	6	1	2	0	1	1,1	20	24	32	16	5	97
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396	2	14	1	4	11,12,21,22	6	3	3	0	1	1,1,1,1	20	4	32	16	5	77
397	2	14	1	4	11	6	1	3	0	1	2	20	4	4	16	5	49
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399	2	14	1	4	11,21,22	7	1	1	0	1	1,1,5	20	4	0	16	5	45
400	3	14	1	4	21	6	3	3	0	1	1	20	9	0	16	12	57
401	3	15	1	2	21	7	1	1	0	1	1	24	24	32	16	6	102
402	3	14	1	3	11	1	1	2	0	1	1	24	24	32	16	12	108
403	3	13	2	4	11	6	3	1	0	1	1	24	9	0	16	13	62
404	3	13	1	2	21	2	2	2	0	1	1	24	24	32	16	4	100
405	3	10	1	4	21	1	1	2	0	1	1	24	24	32	16	4	100
406	3	11	2	4	11	1	1	2	0	1	1	22	12	32	16	5	87
407	3	9	2	4	21	7	1	1	0	1	1	24	18	32	16	1	91
408	3	10	1	4	21	6	3	1	0	1	1	24	24	32	16	3	99
409	3	9	1	4	21	6	3	1	0	1	1	20	4	0	16	12	52
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411	2	13	1	4	21	6	1	4	0	1	1	20	18	32	16	5	91
412	2	13	1	4	21	4	3	6	0	1	1	24	24	8	16	7	79
413	2	15	1	4	11	6	3	3	1	1	4	20	0	3	16	18	57
414	2	13	1	4	11	6	2	3	0	1	1	22	24	18	16	13	93
415	2	12	1	4	11	6	3	1	0	1	1	24	24	32	16	16	112
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417	2	12	1	4	12	6	1	1	0	1	1	24	16	32	16	12	100
418	2	14	1	4	11	6	3	2	0	1	1	20	16	8	16	5	65
419	2	15	1	4	21	6	3	3	0	1	1	24	24	32	16	4	100
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421	2	14	1	4	11	5	3	2	0	1	1	20	18	8	16	5	67
422	2	14	1	4	11	5	1	2	0	1	2	20	16	0	16	6	58
423	2	14	1	4	21	6	1	1	0	1	1	24	24	32	16	4	100
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425	2	15	1	4	11	5	3	1	0	1	1	20	18	32	16	10	96
426	2	11	1	4	11	6	3	1	0	1	1	24	24	32	16	4	100
427	2	11	1	4	11	6	3	5	0	1	1	20	18	8	16	4	66
428	2	11	1	4	21	4	3	3	0	1	1	20	18	8	16	5	67
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431	2	8	1	4	31	6	1	3	0	1	1	20	20	32	16	6	94
432	2	9	1	4	21	6	1	1	0	1	1	24	18	8	4	16	70
433	2	10	2	4	11	6	3	1	0	1	1	24	24	32	16	6	102
434	2	8	2	4	21	1	1	2	0	1	1	24	24	32	16	5	101
435	2	9	1	4	21	6	3	3	0	1	2	20	16	0	16	8	60
436	2	11	1	4	11	6	3	3	0	1	1	24	24	32	16	0	96
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454	3	9	1	4	21	6	1	1	0	1	1	24	24	32	16	16	112
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457	3	10	1	4	11	4	3	3	0	1	1	24	24	32	16	5	101
458	3	10	1	3	11,21	6	3	6	0	1	1,1	20	4	0	16	18	58
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460	3	10	1	3	21	1	1	2	0	1	1	24	24	32	16	1	97
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462	3	13	1	4	21	1	3	1	0	1	1	20	4	4	16	18	62
463	3	15	1	3	11,21	6	3	1	0	1	1,1	24	24	4	16	4	72
464	2	15	1	4	42	6	3	2	0	1	2	20	9	8	4	12	53
465	2	14	1	4	21	6	3	2	0	1	1	24	24	32	16	4	100
466	2	14	1	4	11,21	6	3	6	0	1	5,4	20	0	0	12	16	48
467	2	13	2	4	11,12,21	5	3	1	0	1	1,1,1	20	4	8	16	18	66
468	2	14	2	4	21	6	3	2	0	1	1	20	4	8	16	8	56
469	2	15	2	4	11	6	2	2	2	1	1	20	4	8	16	8	56
470	2	13	1	4	11	6	3	1	0	1	1	20	4	0	16	8	48
471	2	14	1	4	11	6	1	1	1	1	1	20	4	8	16	7	55
472	2	13	1	4	11,21	6	1	2	0	1	1,1	24	24	32	16	4	100
473	2	14	1	4	21	6	2	2	0	1	1	24	24	32	16	4	100
474	2	10	1	4	11,21	6	1	1	0	1	1,1	20	16	0	16	4	56
475	2	14	2	4	21	6	1	6	0	1	1	24	24	32	16	4	100
476	2	13	1	4	11	7	2	1	0	1	1	20	4	4	16	6	50
477	2	12	1	4	21	6	3	3	0	1	1	20	4	4	16	8	52
478	2	11	1	4	11	6	1	2	0	1	1	20	4	32	16	2	74

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479	2	11	1	4	21	1	1	2	0	1	1	24	24	32	16	4	100
480	2	10	1	4	21	6	1	1	0	1	1	20	24	32	16	5	97
481	2	11	1	4	11	6	3	5	0	1	1	24	24	32	16	6	102
482	2	11	1	4	21	1	3	1	0	1	1	24	24	32	16	4	100
483	2	12	1	4	21	8	1	5	0	1	1	20	4	0	16	14	54
484	2	10	2	4	11	6	3	1	0	1	1	20	24	32	16	5	97
485	2	12	1	4	11,21	6	3	3	0	1	1,1	20	24	32	16	9	101
486	2	11	1	4	12	6	3	1	0	1	1	24	24	32	16	4	100
487	2	11	1	4	11	1	1	2	0	1	1	20	24	32	16	5	97
488	2	11	1	4	11	4	3	2	0	1	1	20	9	0	16	10	55
489	2	11	1	4	11	1	3	1	0	1	1	24	24	32	16	5	101
490	2	12	2	4	11	6	3	1	0	1	1	24	24	32	16	4	100
491	2	12	1	4	11	6	3	1	0	1	1	24	24	32	16	4	100
492	2	11	1	4	11	4	3	6	0	1	1	24	24	32	16	2	98
493	2	11	1	4	41	6	3	3	0	1	1	24	24	32	16	4	100
494	2	13	1	4	41	6	2	2	0	1	4	20	4	0	16	10	50
495	2	13	1	4	21	1	3	2	0	1	1	24	24	32	16	4	100
496	2	11	1	4	11	6	3	1	0	1	1	24	24	32	16	5	101
497	2	10	1	4	11	7	2	1	0	1	1	24	24	32	16	5	101
498	2	13	1	4	11	4	3	6	0	1	2	20	4	8	16	4	52
499	2	12	1	4	21	6	1	1	0	1	1	24	24	32	16	4	100
500	2	13	1	4	21	7	1	1	0	1	1	24	24	32	16	5	101
501	2	13	1	4	11,21	6	3	2	0	1	8,8	24	24	32	16	4	100
502	2	14	1	4	21	6	1	2	0	1	1	24	24	32	16	4	100
503	2	14	1	4	21	6	3	6	0	1	1	24	24	32	16	6	102
504	2	11	1	4	11	6	1	1	0	1	1	20	12	8	16	12	68
505	2	13	1	4	11	6	3	2	0	1	1	20	8	8	16	8	60
506	2	12	1	4	32	6	3	1	0	1	2	24	12	16	16	10	78
507	2	12	1	4	21	6	1	2	0	1	1	24	6	8	16	10	64
508	2	13	2	4	11	6	1	1	0	1	1	24	24	16	16	12	92
509	2	15	1	4	11	6	3	6	0	1	1	24	24	32	16	6	102
510	2	13	1	4	21	6	3	1	0	1	1	24	24	32	16	8	104
511	2	13	1	4	21	4	3	3	0	1	2	20	9	8	16	6	59
512	2	13	2	4	11	6	2	3	0	1	1	24	24	32	16	6	102
513	2	13	1	4	11,21	6	3	6	0	1	1,1	21	12	8	16	10	67
514	2	13	1	4	11	5	2	6	0	1	1	24	24	32	16	8	104
515	2	14	2	4	11,21	6	3	3	0	1	1,2	24	24	32	16	10	106
516	2	14	1	4	11	6	1	2	0	1	1	24	24	32	16	8	104
517	2	13	1	4	11,21	6	3	2	0	1	1,4	16	0	0	16	8	50
518	2	11	1	4	11	6	3	2	0	1	1	20	24	32	16	4	96
519	2	10	1	4	11,21	6	1	2	0	1	1,1	20	4	0	16	14	54
520	2	11	2	4	11,21	6	3	2	0	1	1,1	20	4	0	16	12	52
521	2	12	1	4	21	4	2	6	0	1	1	20	8	0	16	14	58
522	2	12	1	4	21	4	2	6	0	1	1	20	16	24	16	10	86
523	2	11	1	4	41	7	3	1	0	1	4	20	16	0	16	10	62
524	2	14	1	4	11,21	6	3	1	0	1	1,1	24	24	32	16	0	96
525	2	13	1	4	11,21	1	3	2	0	1	1,1	20	16	0	16	8	60
526	2	14	1	4	21	6	3	1	0	1	1	24	24	32	16	2	98
527	2	14	1	4	11,21	6	1	3	0	1	1,1	23	18	24	16	4	85
528	2	14	2	3	11,21,22	4	3	3	0	1	1,1,4	20	16	0	16	10	62
529	2	14	2	4	21	1	1	2	0	1	1	24	24	32	16	0	96
530	2	14	2	4	11	6	3	1	0	1	1	24	24	32	16	4	100
531	2	8	1	5	21	3	1	2	0	1	1	24	24	32	16	2	98
532	2	11	2	4	21	6	1	1	0	1	1	20	24	32	16	6	98

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533	2	11	1	4	21	1	1	2	0	1	1	20	0	32	16	5	73
534	2	11	1	5	11,21	3	1	3	0	1	1,1	20	24	32	16	9	101
535	2	10	1	4	21	6	3	1	0	1	1	20	24	32	16	4	96
536	2	11	1	4	11,21	6	3	2	0	1	1,1	24	24	32	16	8	104
537	2	11	1	5	21	4	3	3	0	1	1	24	24	32	16	4	100
538	2	12	2	4	21	6	1	2	0	1	1	20	24	32	16	8	100
539	2	12	1	4	21	6	1	2	0	1	1	24	24	32	16	5	101
540	2	11	1	4	21	4	1	3	0	1	1	21	24	32	16	5	98
541	2	11	1	4	11,32	6	3	2	0	1	1,1	20	4	32	16	4	76
542	2	14	2	4	21	6	3	1	0	1	1	20	24	32	16	4	96
543	2	15	1	4	11	4	3	3	0	1	1	24	24	32	16	4	100
544	2	15	1	4	11	6	3	2	0	1	1	20	24	32	16	5	97
545	2	15	1	4	11	6	3	2	0	1	1	24	24	32	16	5	101
546	3	11	1	3	21	6	3	1	0	1	4	24	12	16	16	10	78
547	3	10	1	3	11	7	1	2	0	1	1	24	24	32	16	4	100
548	3	10	1	2	11	1	3	1	0	1	1	24	24	32	16	5	101
549	3	12	1	4	11	1	1	2	0	1	1	24	24	32	16	2	98
550	3	12	1	2	11,21	6	3	1	0	1	4,2	20	12	32	16	8	88
551	3	12	1	3	21	6	2	2	0	1	4	24	24	32	16	4	100
552	3	13	1	4	11	6	3	1	0	1	1	24	12	16	16	6	74
553	3	15	1	4	21	6	3	1	0	1	1	24	24	32	16	4	100
554	3	15	1	4	11,21	6	3	1	0	1	1	24	24	32	16	4	100
555	3	14	1	4	21	6	3	3	0	1	1	20	24	32	16	2	94
556	3	15	1	2	12	6	3	1	0	1	1	24	24	32	16	1	97
557	3	15	1	3	11	1	3	2	0	1	1	24	24	32	16	4	100
558	3	15	1	2	21	1	1	2	0	1	1	24	24	28	16	4	96
559	3	13	1	3	11	3	3	3	0	1	1	24	24	32	16	4	100
560	3	12	1	4	11	4	3	3	0	1	1	24	24	32	16	4	100
561	3	13	1	4	21	5	3	3	0	1	1	24	24	32	16	4	100
562	3	10	1	2	12,21	4	3	6	0	1	1,4	20	24	32	16	5	97
563	3	11	1	2	21	6	3	6	0	1	1	20	24	32	16	6	98
564	3	10	1	3	11	6	1	2	0	1	1	23	24	32	16	8	103
565	3	12	1	3	11	6	3	4	0	1	1	24	24	32	16	6	102
566	3	10	2	3	21	6	2	1	0	1	1	24	24	32	16	6	102
567	3	10	2	3	21	4	3	3	0	1	1	20	24	32	16	6	98
568	3	11	1	3	21	6	3	1	0	1	1	24	24	32	16	11	107
569	3	11	2	3	12,11,21	5	3	6	0	1	5,1,1	24	12	8	16	14	74
570	3	11	1	3	21	6	3	1	0	1	1	24	24	32	16	10	106
571	3	13	1	3	21	6	3	1	0	1	1	24	24	32	16	6	102
572	3	8	2	3	21	6	1	1	0	1	1	24	24	32	16	12	108
573	3	9	2	3	31	6	3	1	0	1	1	24	24	32	16	8	104
574	3	11	2	3	11,21	6	3	1	0	1	1	24	24	32	16	8	104
575	3	13	2	4	11	6	3	2	0	1	1	24	24	32	16	6	102
576	3	12	2	2	11	4	3	3	0	1	1	24	24	32	16	7	103
577	3	12	2	3	21	1	3	1	0	1	1	20	24	32	16	12	104
578	3	13	2	3	21	6	3	1	0	1	1	24	24	32	16	10	106
579	3	14	2	3	21	6	3	1	0	1	1	20	8	0	16	12	56
580	3	13	2	2	11	8	3	6	0	1	1	20	12	8	16	12	68
581	3	14	2	3	21	6	3	1	0	1	1	24	24	32	16	6	102
582	3	14	2	3	21	6	3	1	0	1	1	24	24	32	16	4	100
583	3	14	2	4	21	6	3	1	0	1	1	24	24	32	16	4	100
584	3	14	2	3	21	6	3	1	0	1	1	24	24	32	16	8	104
585	3	9	1	4	11	7	3	1	0	1	1	24	24	32	16	5	101
586	3	12	1	2	21	6	3	3	0	1	1	24	24	32	16	10	106

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587	3	11	1	4	11,21	6	3	1	0	1	1,1	21	24	32	16	4	97
588	3	9	2	3	11,21	6	3	1	0	1	1,1	20	18	8	16	12	74
589	3	14	1	3	21	4	1	3	0	1	1	24	24	32	16	8	104
590	3	15	1	4	11,21	6	3	1	0	1	1,1	23	24	16	16	10	89
591	3	14	1	3	11,21	6	3	2	0	1	1,1	24	24	32	16	0	102
592	3	15	1	4	12	6	3	1	0	1	1	24	24	32	16	0	96
593	3	10	1	4	11,21	6	3	6	0	1	1,1	24	24	32	16	10	106
594	3	9	1	3	11,21	6	3	1	0	1	1,1	24	24	32	16	2	98
595	3	13	1	4	21	6	3	3	0	1	1	21	24	32	16	4	96
596	3	14	1	4	11	4	3	3	0	1	1	20	12	32	16	4	84
597	3	14	1	4	21	5	3	6	0	1	1	24	24	32	16	0	96
598	3	12	1	4	11,21	6	3	1	0	1	1,1	20	24	32	16	4	96
599	3	13	1	4	21	6	3	2	0	1	1	20	12	32	16	10	90
600	3	13	1	4	11	6	3	3	0	1	1	20	16	8	16	8	68
601	3	14	1	4	21	3	3	2	0	1	4	16	24	32	16	4	92
602	3	11	1	4	11	6	3	1	0	1	1	24	24	32	16	4	100
603	3	10	1	4	21	6	3	1	0	1	1	24	24	32	16	0	96
604	3	13	1	3	11	6	1	3	0	1	1	24	24	32	16	5	101
605	3	11	1	3	21	6	3	1	0	1	1	24	24	32	16	4	100
606	3	12	1	4	11	6	3	2	0	1	1	24	24	32	16	5	101
607	3	8	2	3	11	6	3	1	0	1	1	24	24	32	16	6	102
608	3	9	2	4	21	6	1	1	0	1	1	24	24	32	16	4	100
609	3	8	1	4	21	4	1	3	0	1	1	24	24	32	16	10	106
610	3	8	2	3	11	1	3	1	0	1	1	24	24	32	16	10	106
611	3	13	1	4	21	6	3	1	0	1	1	24	24	32	16	6	102
612	3	13	1	4	11,21	4	3	3	0	1	4,1	20	24	32	16	12	104
613	3	14	1	3	11	1	3	2	0	1	1	21	24	0	16	10	71
614	3	12	1	4	11	6	3	3	0	1	1	24	24	32	16	10	106
615	3	13	1	2	11	6	3	2	0	1	10	20	12	0	16	8	56
616	3	14	2	3	11,21	6	1	2	0	1	1,1	20	12	0	16	10	58
617	3	11	2	4	11,21	7	1	1	0	1	1,1	20	12	8	16	10	66
618	3	14	1	4	21	6	1	1	0	1	1	24	24	32	16	4	100
619	3	9	1	4	11	6	1	1	0	1	1	20	24	32	16	4	96
620	3	14	1	4	11	6	3	1	0	1	1	24	24	32	10	8	104
621	3	9	1	3	21	6	3	1	0	1	1	20	12	0	16	12	60
622	3	8	1	4	11	1	1	2	0	1	1	20	12	0	16	8	56
623	3	13	1	4	41	6	3	1	0	1	1	24	24	32	16	10	106
624	3	10	2	4	11	6	1	2	0	1	1	24	24	32	16	6	102
625	3	12	1	4	11	6	3	3	0	1	1	24	24	32	16	10	106
626	3	11	1	4	21	6	3	2	0	1	1	24	24	32	16	4	100
627	3	11	1	4	11	6	3	2	0	1	1	24	24	32	16	8	104
628	3	10	2	4	11	6	1	2	0	1	1	24	24	32	16	8	104

<p>School</p> <p>1-Corporation</p> <p>2-Government aided</p> <p>3- Private</p>	<p>16.How did the accident happen</p> <p>1-Fall from stairs</p> <p>2-Fall from window</p> <p>3-Fall from tree</p> <p>4-Fall from bicycle</p> <p>5-Traffic accident</p> <p>6-Collision against object</p> <p>7-Fights</p> <p>8-Others</p>
<p>Sex</p> <p>1-Male</p> <p>2-Female</p>	<p>17.What cause the accident</p> <p>1-Pushing</p> <p>2-Slipping</p>
<p>Socioeconomic status (SES)</p> <p>1-Upper class</p> <p>2-Upper middle class</p> <p>3-Lower middle class</p> <p>4-Upper lower class</p> <p>5-Lower class</p>	<p>18.Where did the accident happen</p> <p>1-Home</p> <p>2-School</p> <p>3-Street</p> <p>4-Field/Playground</p> <p>5-Park</p> <p>6-Others</p>
<p>19.4. Dental fluorosis</p> <p>0-Normal</p> <p>1-Questionable</p> <p>2-Very mild</p> <p>3-Mild</p> <p>4-Moderate</p> <p>5-Severe</p> <p>6-Excluded</p> <p>9-Not recorded</p>	<p>19.5.Community periodontal index</p> <p>0-Healthy</p> <p>1-Bleeding</p> <p>2-Calculus</p> <p>3-Pocket 4-5mm</p> <p>4-Pocket 6mm or more</p>